ioLogik 1300 Series User's Manual

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www.moxa.com/product

MOXA®

ioLogik 1300 Series User's Manual

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Table of Contents

1

Overview

The ioLogik 1300 supports Moxa's patented Active OPC Server with push communications technology, and provides an economical solution for accessing multiple remote I/O devices connected to the same private IP network, which itself links to the outside world over a cellular connection using dynamic IP addresses.

The following topics are covered in this chapter:

❒ **ioLogik 1300 Overview**
  ➢ Appearance
  ➢ Dimensions Diagram
  ➢ Package Checklist
  ➢ Product Features
  ➢ I/O Channels Available on ioLogik 1300 Models
  ➢ Communication Interface

❒ **Product Specifications**
  ➢ Common Specifications
  ➢ ioLogik 1312 Specifications
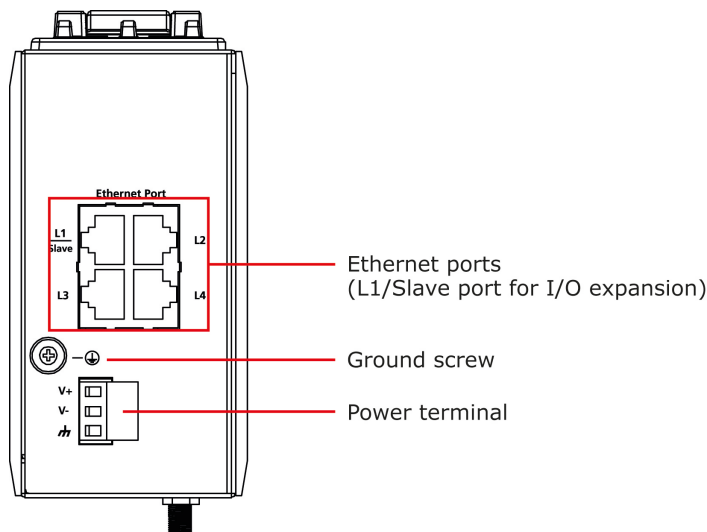 ➢ ioLogik 1342 Specifications
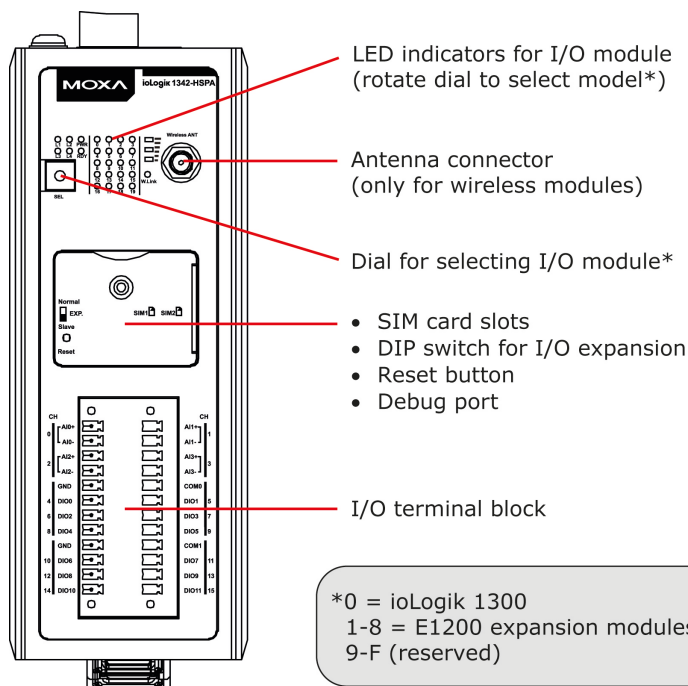
ioLogik 1300 Overview

The ioLogik 1300 is a wireless remote I/O product with unique hardware and software designs. The ioLogik 1300's hardware design includes a wireless communication interface (GPRS/HSPA) and a 4-port unmanaged Ethernet switch, enabling the ioLogik 1300 to seamlessly connect to a variety of field devices. One of the Ethernet ports can be used to link to 8 daisy-chained ioLogik E1200 expansion modules to provide more than 100 channels and different IO combinations. The ioLogik 1300 acts as the "head" unit. The ioLogik 1300's single IP is all that's required to connect the entire I/O array to your network, providing the perfect solution for industrial field sites that have an insufficient number of IP addresses.

Appearance

Top View

Ethernet ports
(L1/Slave port for I/O expansion)

Ground screw

Power terminal

Front View

LED indicators for I/O module
(rotate dial to select model*)

Antenna connector
(only for wireless modules)

Dial for selecting I/O module*

- SIM card slots
- DIP switch for I/O expansion
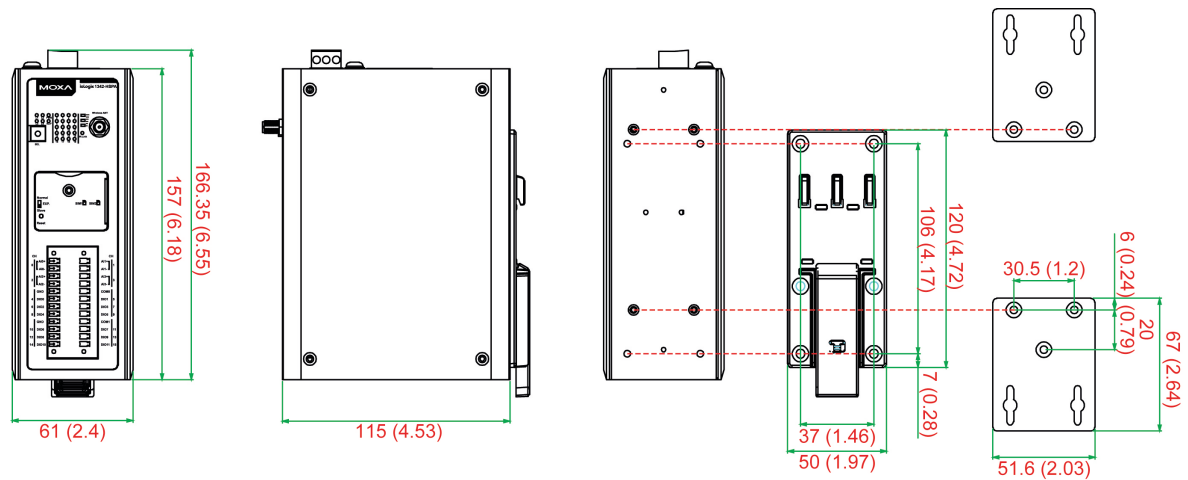- Reset button
- Debug port

I/O terminal block

*0 = ioLogik 1300
 1-8 = E1200 expansion modules
 9-F (reserved)

Dimensions Diagram

Units: mm (in)

Package Checklist

The ioLogik 1300 is shipped with the following items:

- ioLogik 1300 series device
- 3-pin screw terminal block (for power input)
- 2 12-pin screw terminal blocks (for I/O)
- 1 antenna (only for wireless modules)
- Documentation and software CD
- Hardware installation guide

NOTE: Please notify your sales representative if any of the above items are missing or damaged.

Product Features

- Supports cellular (HSPA/GPRS), Ethernet, and serial communication (ioLogik 1300-HSPA/GPRS only)
- 4-port unmanaged switch built in for linking to Ethernet devices
- Optimized I/O expansion port for daisy chaining up to 8 ioLogik E1200 units
- Active communication with patented MX-AOPC UA Server
- Smart alarm management: Email, SNMP traps, TCP, UDP
- Wide operating temperature: -40 to 75°C (-40 to 167°F)

I/O Channels Available on ioLogik 1300 Models

Model Name	Digital Inputs	DI/DO Configurable	Analog Inputs
ioLogik 1312	8	8	–
ioLogik 1342	–	12	4

Communication Interface

Model Name	Communication Interface
ioLogik 1300-GPRS	Serial / Ethernet / GPRS (2G)
ioLogik 1300-HSPA	Serial / Ethernet / GPRS (2G) /HSPA (3G)

Product Specifications

Common Specifications

Cellular (ioLogik 1300-HSPA/GPRS only)

ioLogik 1300-HSPA:

• Five-Band UMTS/HSPA+ (WCDMA/FDD), 800/850/AWS1700/1900/2100 MHz

• Quad-band GSM/GPRS/EDGE, 850/900/1800/1900 MHz

ioLogik 1300-GPRS: • Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz

HSPA data rates:

• Up to 5.76 Mbps upload speed (max.)

• Up to 14.4 Mbps download speed (max.)

EDGE Class 12 data rates:

• Up to 237 kbps upload speed (max.)

• Up to 237 kbps download speed (max.)

GPRS Class 12 data rates:

• Up to 85.6 kbps upload speed (max.)

• Up to 85.6 kbps download speed (max.)

SIM Control Voltage: 3.0/1.8 V

LAN

Ethernet:

• 4 switched 10/100 Mbps RJ45 ports

• 1 optimized port for faster downstream communications with daisy-chained ioLogik E1200 units

Note: The optimized daisy-chain port is not supported on wind industry devices (ioLogik E1261W-T, E1261H-T, or E1263H-T).

Protection: 1.5 kV magnetic isolation

Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, BOOTP, SNMP, HTTP, CGI, SNTP, SMTP

Power Requirements

Power Input: 24 VDC nominal, 9 to 48 VDC

Physical Characteristics

Wiring: I/O cable max. 14 AWG

Mounting: DIN rail, wall

Environmental Limits

Operating Temperature:

Standard Models: -10 to 60°C (14 to 140°F)

Wide Temp. Models: -30 to 70°C (-22 to 158°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Altitude: Up to 2000 m

Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Standards and Certifications

Safety: UL 508, EN 60950-1, NCC

EMI:

EN 55022; EN 61000-3-2; EN 61000-3-3;

FCC Part 15, Subpart B, Class A

EMS:

EN 55024, EN 61000-4-2, EN 61000-4-3,

EN 61000-4-4, EN 61000-4-5, EN 61000-4-6,

EN 61000-4-8, EN 61000-4-11, EN 61000-6-2

Radio: FCC Part 22H, FCC Part 24E,

EN 301 489-1, EN 301 489-7, EN 301 511

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

Vibration: IEC 60068-2-6

Green Product: RoHS, CRoHS, WEEE

Note: Please check Moxa's website for the most up-to-date certification status.

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

ioLogik 1312 Specifications

Inputs and Outputs

Digital Inputs: 8 channels

Configurable DI/Os: 8 channels

Isolation: 3k VDC or 2k Vrms

Digital Input

Sensor Type: Wet Contact (NPN or PNP) and Dry Contact

Input Leakage Current: < 1 mA (@ 30 VDC)

I/O Mode: DI or Event Counter

Dry Contact:

• On: short to GND

• Off: open

Wet Contact (DI to COM):

• On: 10 to 30 VDC

• Off: 0 to 3 VDC

Common Type: 8 points per COM

Counter Frequency: 2.5 kHz

Digital Filtering Time Interval: Software configurable

Digital Output

Type: Sink

I/O Mode: DO or Pulse Output

Pulse Output Frequency: 5 kHz

Over-voltage Protection: 45 VDC

Over-current Protection: 1.5 A per channel @ 25°C

Over-temperature Shutdown: 175°C (min.)

Current Rating: 500 mA per channel @ 25°C

ioLogik 1342 Specifications

Inputs and Outputs

Analog Inputs: 4 channels

Configurable DI/Os: 12 channels

Isolation: 3k VDC or 2k Vrms

Analog Input

Type: Differential input

Resolution: 16 bits

I/O Mode: Voltage / Current (software selectable)

Input Range: ±10 V, 0 to 10 V, 0 to 20 mA, 4 to 20 mA (with burn-out detection)

Accuracy:

• ±0.1% FSR @ 25°C

• ±0.3% FSR @ -10 and 60°C

• ±0.5% FSR @ -30 and 70°C

Sampling Rate:

• All channels: 400 samples/sec

• Per channel: 100 samples/sec

Input Impedance: > 1M ohms (min.)

Built-in Resistor for Current Input: 120 ohms

Digital Input

Sensor Type: Wet Contact (NPN or PNP) and Dry Contact

Input Leakage Current: < 1 mA (@ 30 VDC)

I/O Mode: DI or Event Counter

Dry Contact:

• On: short to GND

• Off: open

Wet Contact (DI to COM):

• On: 10 to 30 VDC

• Off: 0 to 3 VDC

Common Type: 6 points per COM

Counter Frequency: 2.5 kHz

Digital Filtering Time Interval: Software configurable

Digital Output

Type: Sink

I/O Mode: DO or Pulse Output

Pulse Output Frequency: 5 kHz

Over-voltage Protection: 45 VDC

Over-current Protection: 1.5 A per channel @ 25°C

Over-temperature Shutdown: 175°C (min.)

Current Rating: 500 mA per channel @ 25°C

2

Installation

In this chapter, we provide instructions on how to install the ioLogik 1300 I/O server to connect to the network and serial devices.

The following topics are covered in this chapter:

❒ **Hardware Installation**
  ➢ Installing the ioLogik 1300 on a DIN Rail
  ➢ Removing the ioLogik 1300 from a DIN Rail

❒ **Powering on the ioLogik 1300**

❒ **Grounding the Unit**

❒ **Installing SIM Cards (cellular models only)**

❒ **I/O Wiring Diagrams**

❒ **LED Indicators**

❒ **DIP Switch**

❒ **Daisy-Chaining for I/O Expansion**

❒ **Reset to Factory Defaults**

❒ **Network Installation**
  ➢ Ethernet Communication
 ➢ TCP/IP Settings

❒ **Installing the IOxpress Utility**
  ➢ System Requirements
  ➢ Installing IOxpress from the CD
 ➢ Installing IOxpress from the Internet

Hardware Installation

Installing the ioLogik 1300 on a DIN Rail

The DIN-rail attachment plate should already be fixed to the back panel of your ioLogik 1300. If you need to reattach the plate, be sure the spring-loaded bracket is oriented towards the bottom, as shown in the figures below.

STEP 1: If the spring-loaded bracket is locked in place, push the recessed button to release it. Once released, you should feel some resistance from the spring as you slide the bracket up and down a few millimeters in each direction.

Spring-loaded bracket

Recessed button
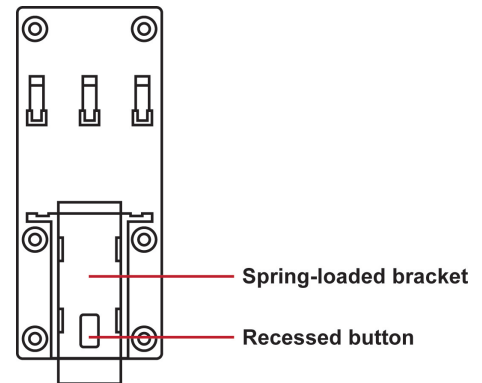
STEP 2: Insert the top of the rail into the upper lip of the attachment plate's slot.
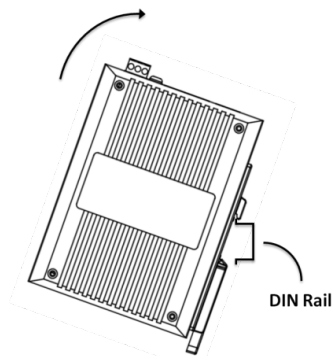
STEP 3: The attachment unit should now snap into place along the rail, as shown below.
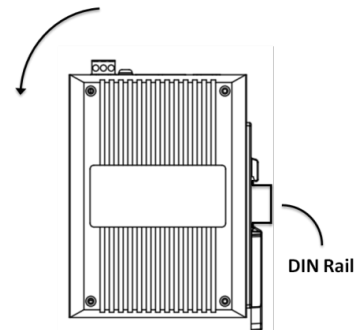
DIN Rail

DIN Rail

Removing the ioLogik 1300 from a DIN Rail

To remove the ioLogik 1300 from a DIN rail, use a screwdriver to pull down the spring-loaded bracket until it locks in place, as shown in the diagram at the right. Next, rotate the bottom of the ioLogik 1300 upwards until you can remove it from the DIN rail.

DIN Rail
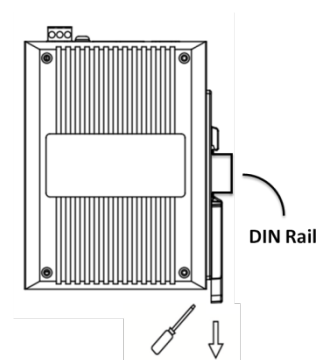
WARNING

This equipment is intended to be used in Restricted Access Locations. External metal parts will be hot! Maintenance personnel should wear protective gear before touching outside surface.

Powering on the ioLogik 1300

The ioLogik 1300 can receive power from a 9 to 48 VDC power source. Input power is applied to the positive (V+) and negative (V-) terminals on the connector.

After connecting the ioLogik 1300 to the power supply, it will take 30 to 60 seconds for the operating system to boot up. The green Ready LED will illuminate continuously until the operating system is ready.
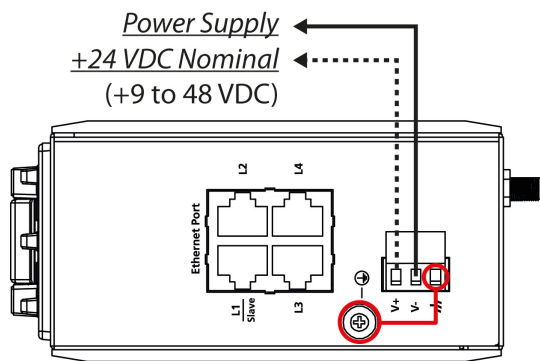
Grounding the Unit

The ioLogik 1300 is equipped with a ground connector labeled ⌁.

> ⚠️ **ATTENTION**
>
> Be sure to note the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If currents exceed the maximum rating the wires will overheat, and may cause serious damage to the equipment. For safety reasons, wires connecting the power supply should be at least 2 mm in diameter (e.g., 12 gauge).

Installing SIM Cards (cellular models only)

The ioLogik 1300 supports two SIM cards (cellular models only). The card slots are located inside the ioLogik 1300, as shown here. The card slot is hidden beneath a cover plate attached by a screw that must first be removed before the slot can be accessed. After removing the screw holding the cover plate in place you can insert or remove the SIM cards. Be sure to refasten the cover plate when you are done.

I/O Wiring Diagrams
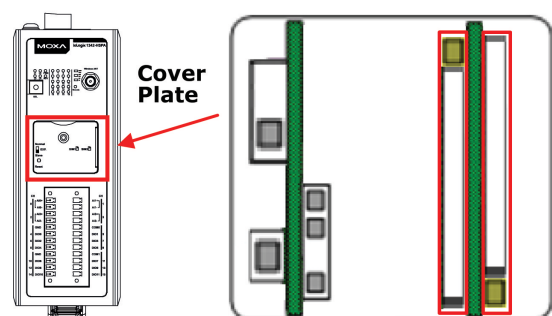
Digital Inputs/Outputs   **Analog Inputs**
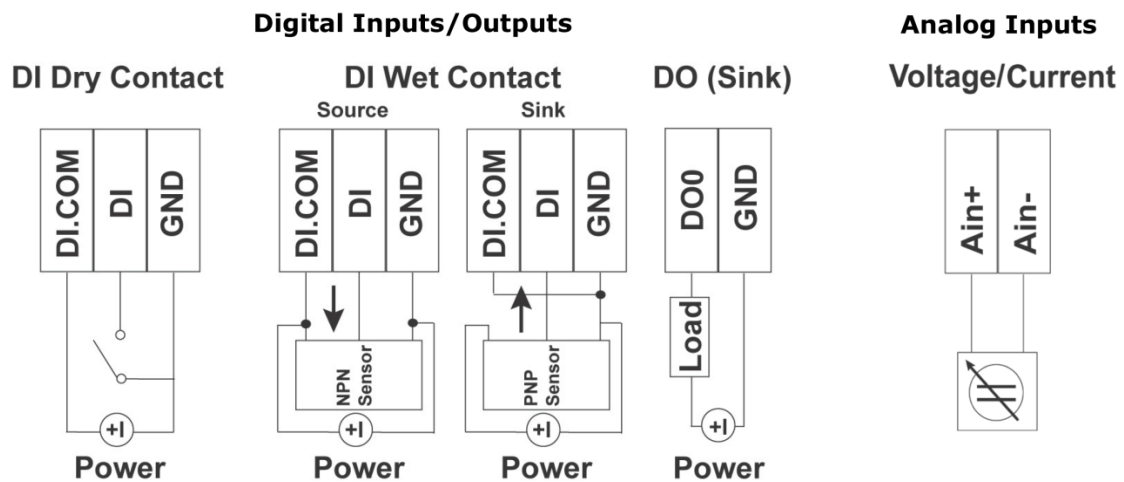
LED Indicators

| Type	Color	Description
Power	Green	System power is ON
(PWR)	Off	System power is OFF
Ready	Green	System is ready
(RDY)	Red	System error
	Flashing	Locating device
	Off	System is not ready
Ethernet Port	Green	Ethernet connection enabled at 100 Mbps
(L1/L2/L3/L4)	Amber	Ethernet connection enabled at 10 Mbps
	Flashing	Data is being transmitted
	Off	Disconnected
I/O Channel Status*	Green	Channel ON
(0 to 15)	Off	Channel OFF or No Counter/Pulse signal
W.Link**	Green	Cellular connection established
	Off	Off
Signal Status**	Off	No signal, or No SIM card
	1 LED	Weak or insufficient (SMS only)
	2 LEDs	Average (good for cellular connections)
	3 LEDs	Excellent signal

*Use the rotary switch to select which module's I/O channel status is displayed.

     0   = ioLogik 1300

     1 to 8   = E1200 expansion

     9 to F   = Reserved

**Wireless modules only

DIP Switch

The DIP switch is used to trigger the ioLogik 1300 to refresh its connection with the attached ioLogik E1200 modules. When a module is disconnected, or if you replace one module with a new module, remove the screw holding the cover plate to access the DIP switch (shown in the figure), and then move the DIP switch from the down position to the up position. If the DIP switch is already in the up position, move it down and then back up again.
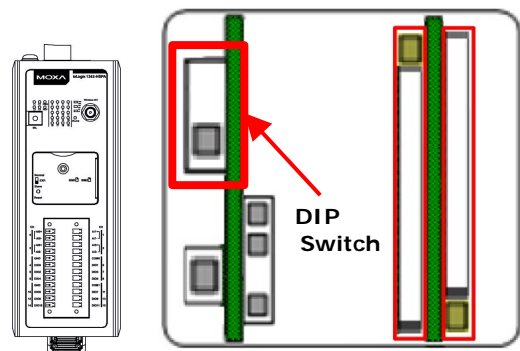

Daisy-Chaining for I/O Expansion

Up to 8 ioLogik E1200 devices can be connected in a daisy chain configuration to the ioLogik 1300 via the L1/Slave port on the ioLogik 1300. An IOxpress configuration scheme is called a project. If the IOxpress project includes expansion devices, the ioLogik 1300 will automatically start running in expansion mode.

If the ioLogik 1300 is running, you can replace one of the expansion units without powering down the ioLogik 1300. Take the following steps to replace an expansion unit:

1. Power-off the expansion unit.
2. Replace the unit with another expansion unit of the same model.
3. Access the DIP switch beneath the cover plate (as shown below).
4. Move the DIP switch from the down position to the up position to trigger the ioLogik 1300 to refresh its connection with the expansion units. If the DIP switch is already in the up position, move it down and then back up again.
5. The expansion unit will start running.
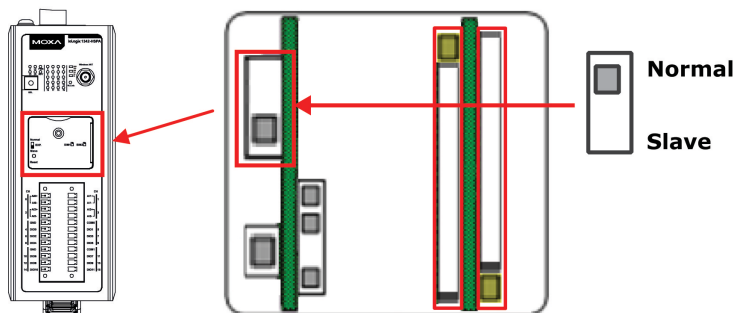
NOTE	Expansion units must be replaced with the same model of expansion unit. If you would like to use a different expansion unit model, you must first change the relevant IOxpress settings.

The following figure illustrates a simple daisy-chain of I/O modules using the ioLogik 1300 for wireless connectivity.

ioLogik 1300   ioLogik E1200   ioLogik E1200   ioLogik E1200   ioLogik E1200   ioLogik E1200
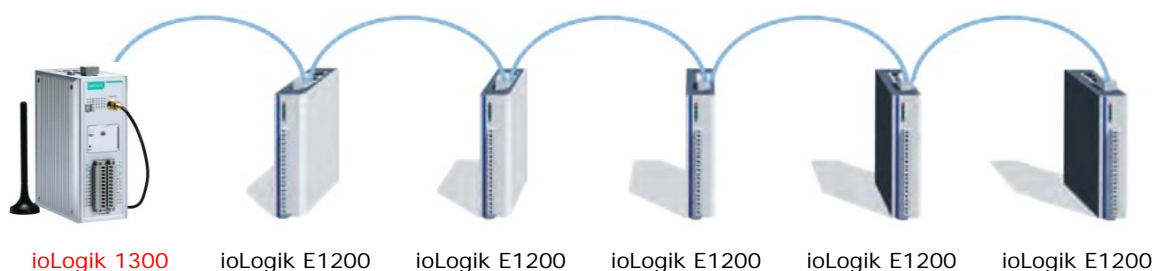
When daisy-chaining an array of devices, the first device in the chain (after the ioLogik 1300) must be connected to the L1 Slave port on the top of the ioLogik 1300 (outlined in red in the diagram).
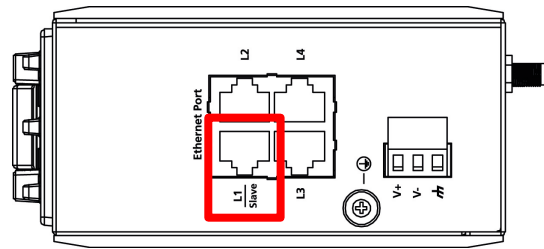

> ⚠ **ATTENTION**
>
> When using the ioLogik 1300 as the wireless head of an array of ioLogik E1200 modules, make sure that:
>
> 1. You connect the first E1200 expansion module in the array to the ioLogik 1300's L1 Slave port.
> 2. A maximum of 8 ioLogik E1200 devices are connected in a single array.

Reset to Factory Defaults

If you need to reset the ioLogik 1300 to factory defaults, press and hold the reset button (located under the cover-plate, as shown in the diagram) for 5 seconds.
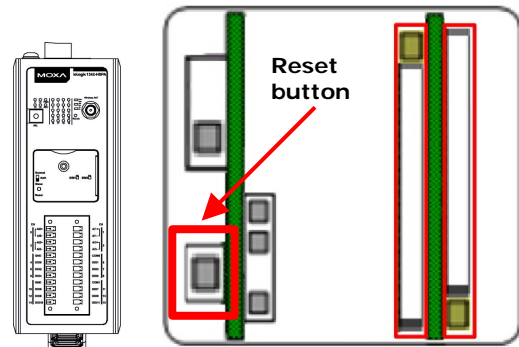
> ⚠ **WARNING**
>
> Resetting your device to factory defaults will result in the loss of all configuration settings and any Click&Go Plus logic settings that have already been configured.

Network Installation

Ethernet Communication

Connections to the LAN port are made through an RJ45 connector on the ioLogik 1300 device. The wiring and pin connections for these connectors are described in separate sections below.

> ⚠ **ATTENTION**
>
> The maximum cable length of a 10/100BaseT connection is 100 m (350 feet), but the actual limit could be shorter depending on the amount of electrical noise in the environment. To minimize the amount of noise, Ethernet cables should not run parallel to power cables or other cables that generate electrical noise.

TCP/IP Settings

The following table shows the TCP/IP parameters supported by the LAN port. The ioLogik 1300 will revert to these default values whenever it is reset to factory defaults.

LAN Port	
Parameter	**Supported Values**
IP Address	Default: 192.168.127.253
Subnet Mask	Default: 255.255.255.0
Gateway	Default: 0.0.0.0

IP Address

The ioLogik 1300's IP address.

Subnet Mask

Determines the subnet on which the device is located.

Gateway

The gateway IP address, which determines how the controller communicates with devices outside its subnet.

The IP address, subnet mask, and gateway are static; contact your network administrator to obtain these addresses for the ioLogik 1300 device.

Installing the IOxpress Utility

The ioLogik 1300 can be remotely managed and configured over an Ethernet with Moxa's **IOxpress** utility. IOxpress is a Windows utility provided for the configuration and management of the ioLogik 1300. IOxpress can be used to remotely monitor and configure devices from any location on the network. The IOxpress graphical user interface provides easy access to all status information and configuration settings, and can also be used to configure Click&Go Plus rules, and to handle front-end events.

System Requirements

Hardware Requirements	
CPU	Intel Pentium 4 CPU and above
RAM	Min. 512 MB, 1024 MB is recommended
Network Interface	10/100 Ethernet
Software Requirements	
Operating System	Microsoft Windows 2000, XP or later
Editor (not required)	Microsoft Office 2003 (Access 2003) or later

Installing IOxpress from the CD

Insert the documentation and software CD into the host computer. Locate the Software/Utility_IOxpress directory and run SETUP.EXE from that location.

The installation program will guide you through the installation process and install the **IOxpress** utility. After the installation is finished, run IOxpress from the Windows Start menu.

Installing IOxpress from the Internet

You can also download IOxpress from Moxa's website. To do this, first click on the following link to access the website's search utility:

http://www.moxa.com/support/search.aspx?type=soft

When the web page opens, enter the model name of your product in the search box. Navigate to the product page, and then click on **Utilities** (in the middle of the page), located in the box titled **Software**.

NOTE	Additional information on using IOXpress can be found in **Chapter 3: The IOxpress Utility**.

3

The IOxpress Utility

In this chapter, we explain how to configure the ioLogik 1300.

The following topics are covered in this chapter:

❑ **Introduction**
  ➢ Application Interface
❑ **Using IOxpress**
❑ **Offline Configuration**
  ➢ Creating a Project
  ➢ Adding an ioLogik 1300 Device to a Project
  ➢ Adding E1200 Devices to a Project
❑ **Setting Up a Project**
❑ **Settings**
❑ **General Device Settings**
  ➢ Network
  ➢ General
❑ **Peer-to-Peer**
  ➢ General Settings
  ➢ P2P Rule Settings
❑ **Online Configuration**
  ➢ Introduction
  ➢ Searching for Online Devices
  ➢ Deploying Individual Devices
  ➢ IO Status

Introduction

The ioLogik 1300 can be managed and configured over an Ethernet using the IOxpress utility. IOxpress's graphical user interface provides easy access to all status information and settings, and can also be used to configure Click&Go Plus rules to handle front-end events.

Application Interface

Main screen

The following figure shows the main screen of the IOxpress utility. There are four main areas:

- **Menu Bar**
- **Configuration Management**
- **Content Configuration**
- **Log Messages**
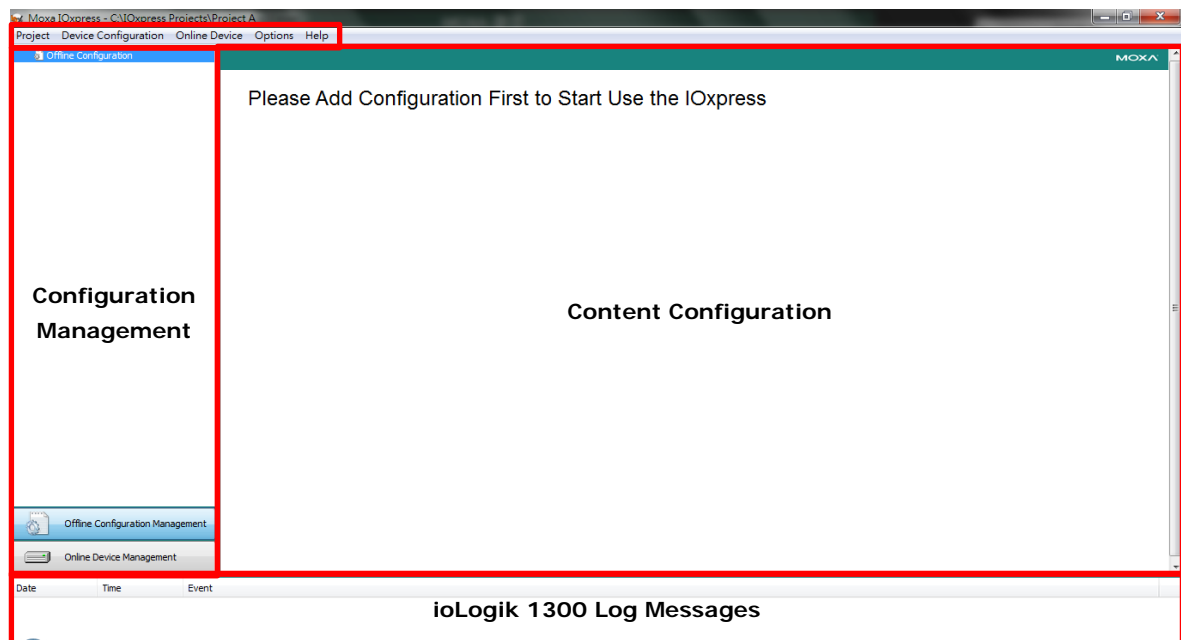
Menu Bar

There are five tabs in the menu bar:

- **Project:** For managing projects.
- **Device Configuration:** Functions for offline configuration.
- **Online Device:** Functions for online configuration.
- **Options:** Preferences and network interface.
- **Help:** Version information

NOTE	If the host computer has multiple interfaces, be sure to select the correct network interface before searching for online devices.

Using IOxpress

IOxpress is usually configured in two steps:

1. **Offline Configuration:** The operator uses IOxpress to configure settings, which are stored locally.
2. **Online Configuration:** The operator uses IOxpress to export the configuration to devices on the network.

The basic idea is to use a project created offline to set up all of your devices. That is, the settings configured offline are exported over the network to online devices. This can be done either in batch mode, or on a case-by-case basis.

IOxpress can also be used to access online devices directly to check I/O status, upgrade firmware, export configurations, and restart the device.

The following flowchart gives an overview of the IOxpress configuration process. Once offline configuration is completed, you can start online configuration.

Offline Configuration	**Online Configuration**

1. **Select Device Configuration Template**
   ✓ **ioLogik 1300 + ioLogik E1200**
2. **Detailed configuration**
   ✓ **general settings**
   ✓ **Peer to Peer**
	1. **Auto-search for online devices**
	   ✓ **ioLogik 1300 + ioLogik E1200**
	2. **Select the functions to be executed, and then configure them**
	3. **Deploy the configuration to one or more devices**
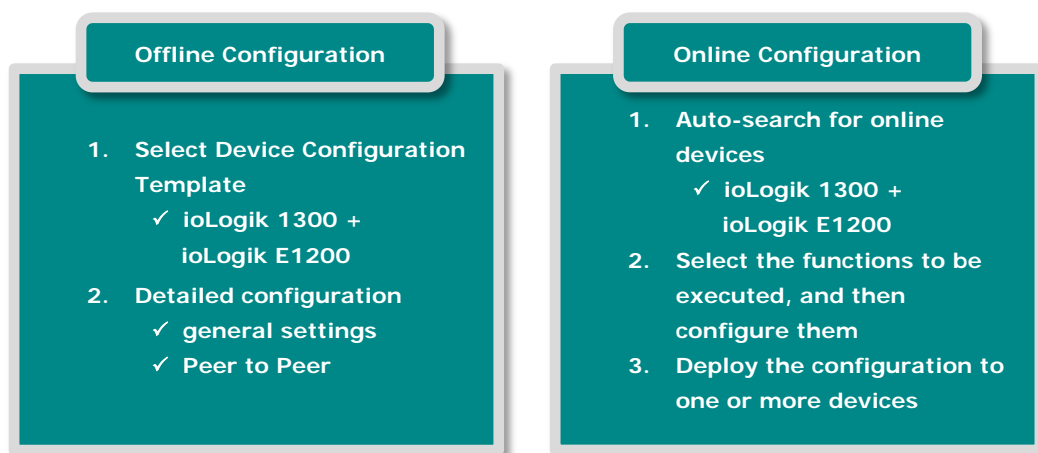
Offline Configuration

Creating a Project

IOxpress configuration schemes are called **Projects**. The first step to using IOxpress is to create a project for automating your device configuration processes. This can be done offline, after which the project can be exported to other devices over the network during the online configuration phase, discussed later in this chapter.

Projects are automatically saved in the following folder:

    C:\Users\Public\Documents\Moxa\IOxpress\Database

We recommend using folder names to manage your projects. For example, if you would like to create three projects for three different segments of the network, you could create three folders named area1, area2, and area3.
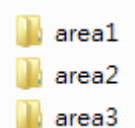
The first time you use offline configuration, create a new project by clicking New from the dropdown menu under the Project tab.
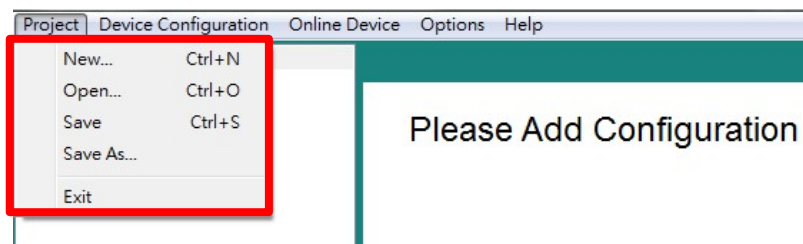
Click **Offline configuration**, or select **Device Configuration** from the tool bar. You may click on either the **Add Configuration** or **Add Configuration from File...** option to add a device to the new project.
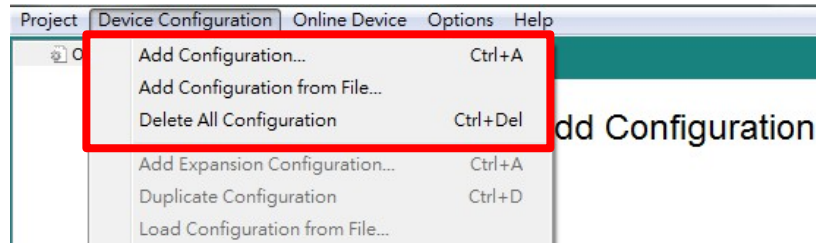

# Adding an ioLogik 1300 Device to a Project

The ioLogik 1300 can be used as the head of a cascaded array of ioLogik E1200 modules, with Click&Go Plus logic used to extend communication capability to the entire array.

Adding E1200 Devices to a Project

Up to 8 ioLogik E1200 series devices can be connected to the ioLogik 1300 in a daisy-chain configuration.

ioLogik 1300   ioLogik E1200   ioLogik E1200   ioLogik E1200   ioLogik E1200   ioLogik E1200
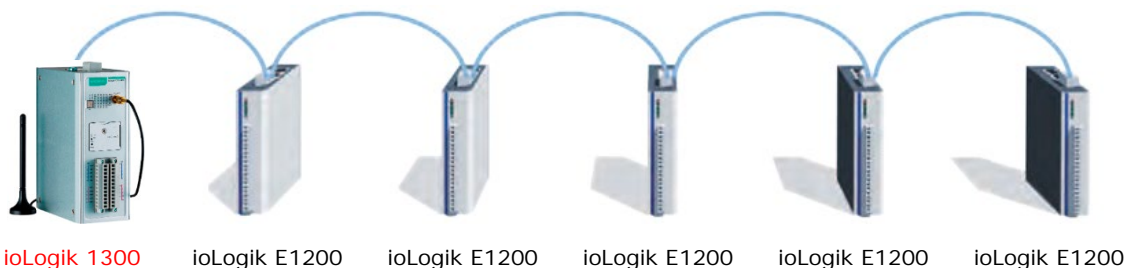
Right click on the ioLogik 1300 device you have just added, and then select **Add Expansion Configuration**. After adding an E1200, the settings for the added device can be found in the **I/O settings**, **Tag selection**, and **data logging – profile** areas.
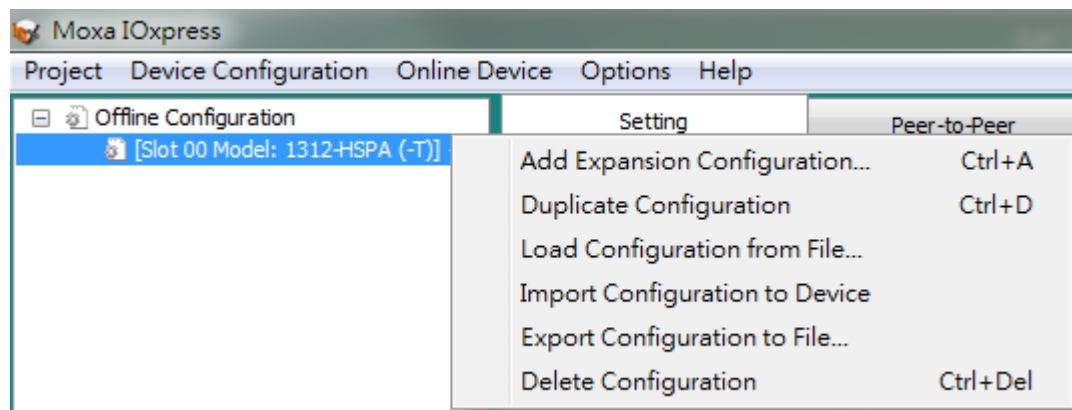
> **ATTENTION**
>
> If the IOxpress project includes expansion devices, the ioLogik 1300 will automatically run in expansion mode.

> **ATTENTION**
>
> The IP address of the ioLogik 1300 should not be the same as its E1200 expansion units.

NOTE   The following ioLogik E1200 models can be used for ioLogik 1300 I/O arrays:
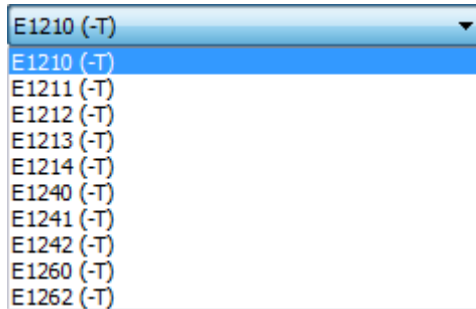
NOTE   The location of each model is fixed. If you would like to change a device in an E1200 array, make sure that the order of the expansion modules is the same as in the Expansion Configuration list you just modified. An example is shown below:
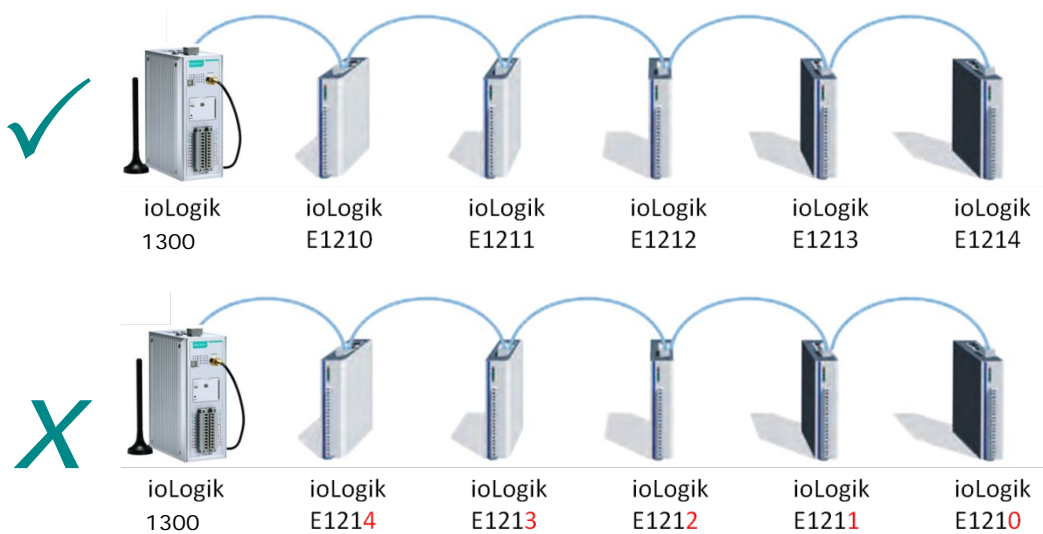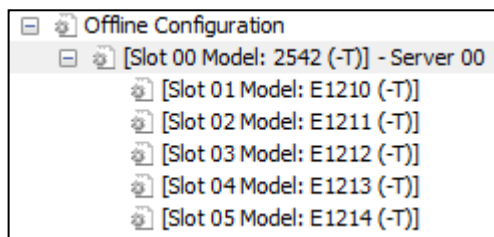
Setting Up a Project

After you have created the project, you can start to configure each model in the project. The configuration window has four tabs:

- **Settings**
- **Click&Go Plus**
- **Click&Go Plus Simulator**
- **Peer-to-Peer**

Settings

In the **Settings** section, you will find basic settings used to set up a selected device.
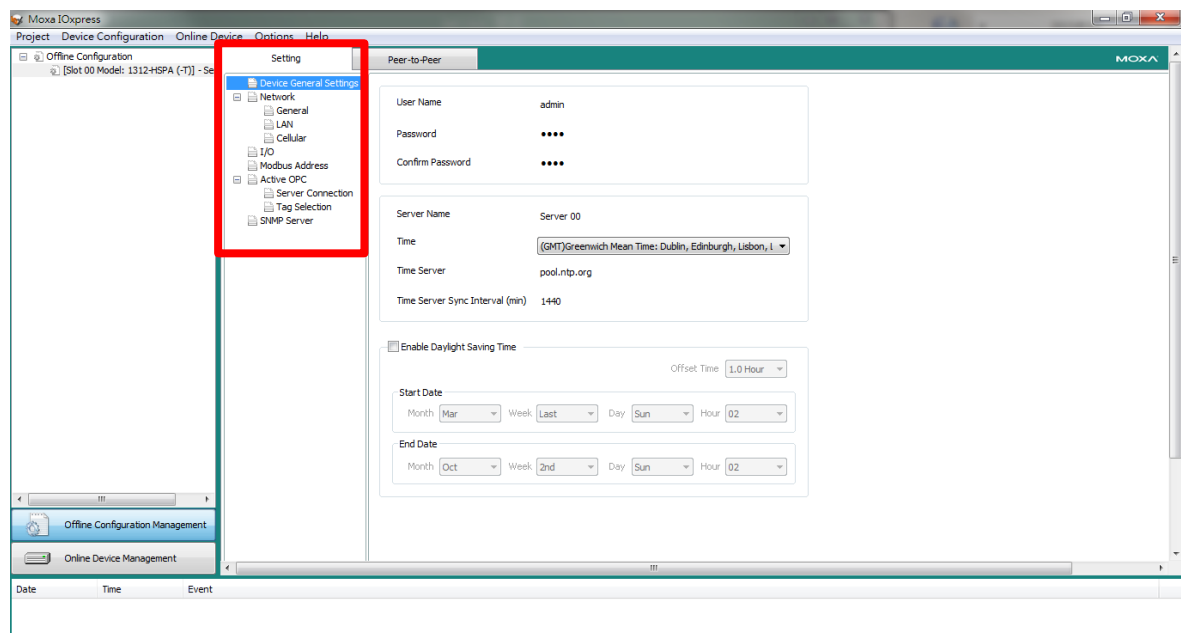
General Device Settings

The User Name, Password, Server Name, Time, Time Server, and Daylight Saving functions can be accessed from under the General Settings tab.

Server Name
IOxpress supports long server names and a location description with up to 30 characters.

Daylight Saving Time
To set up the Daylight saving schedule, check the Enable Daylight Saving Time checkbox, and then configure Offset Time, Start Date, and End Date.

Network

There are three sub-pages under the **Network item** tab: **General**, **LAN**, and **Cellular** (Cellular applies to the ioLogik 1300-GPRS/HSPA only).
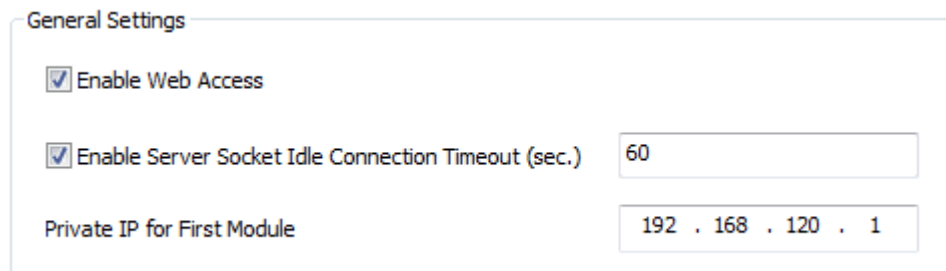
General

There are two columns under general tab: **Select major network Interface** and **General Settings**.

Select Major Network Interface

Select major network Interface is only available for the ioLogik 1300-GPRS/HSPA models. See **Chapter 4: Cellular Network Setup and Configuration** for details.

General Settings

Enable Web Access

Use this checkbox to enable or disable the web console. When enabled, the ioLogik can be configured from a web browser. If not enabled, you will not be able to open the web console.

Enable Server Socket Idle Connection Timeout

Server Socket Idle Connection Timeout is designed to avoid TCP connection failures when the network host is unable to respond due to a hardware failure or network problem.

If **Server Socket Idle Connection Timeout** is enabled: When the ioLogik's connection to the server exceeds the specified time period the device will automatically release its Modbus/TCP connection to the server to free up the port for the next connection.

If **Server Socket Idle Connection Timeout** is not enabled: If the network host is unable to respond due to a hardware failure or network problem, the ioLogik will continue to wait for a response from the host, causing the TCP port to be occupied indefinitely by the host.

Private IP for First Slot of Slave Module

An array of up to 8 modules can be connected to the ioLogik 1300. The Private IP for First Slot of Slave Module assigns an IP to the first E1200 device. The IPs for subsequent devices in the chain will be automatically assigned consecutively. For example, if the IP of the first E1200 device is set to 192.168.120.1, the IP of the second E1200 will be 192.168.120.2, the third IP will be 192.168.120.3, and so on.
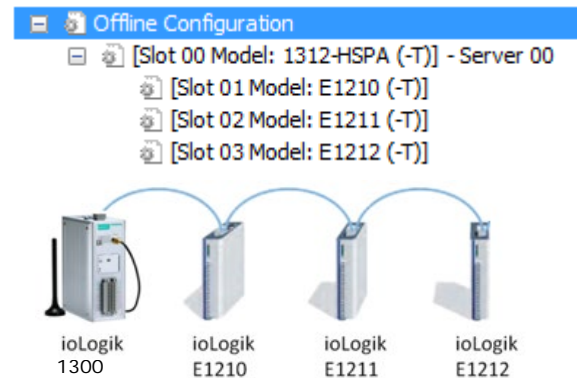
LAN

IP Settings

You can set up a static or dynamic IP address for the ioLogik, as well as the subnet mask and gateway address.

Use this field to specify the IP addresses of one or two DNS servers. DNS servers can be used to find available e-mail addresses when setting up Click & Go plus rules.

Cellular (ioLogik 1300-GPRS/HSPA only)

Cellular is only available for the ioLogik 1300-GPRS/HSPA models. See **Chapter 4: Cellular Network Setup and Configuration** for details.

I/O

In the I/O section, you can configure I/O settings for ioLogik 1300 devices. Items that can be modified will be shown in **black**. Items that cannot be modified will be shown in **light gray**.

Setting	Functions
IO Mode Setting	Channel Mode
	Name
DI Setting	Filter
Counter Setting	Filter
	Initial Value
	Active Mode
	Power On Status
	Scaling Enable
	Scaling Offset
	Scaling Interval
DO Setting	Enable Communication Watchdog for Safe Mode
	Enable Auto Clear Safe Mode
	Power On Status
	Power On Delay
	Safe Mode Status
Pulse Setting	On Width
	Off Width
	Count
	Power On Status
	Power On Delay
	Safe Mode Status
AI Setting	Input Range
	Burnout Value
	Scaling Slope
	Scaling Offset
	Scaling Unit

Setting	Functions
Virtual Channel Setting	Enable
	Slot No.
	Channel No.
	Function
	Interval (min)
	Sampling Time (min)

Select module

Select the module that you would like to configure. You may select **All** modules, in which case information on all I/O channels in the project will be displayed.

IO Mode Setting

- **Channel Mode**

  DIO channels can be set to one of four modes: **DI**, **Event Counter**, **DO**, or **Pulse output**. AI channels can be set to one of five modes: **±10 V**, **0 to 10 V**, **0 to 20 mA**, **4 to 20 mA**, or **4 to 20 mA (Burnout)**. AO channels can be set to one of two modes: **0 to 10 V** and **4 to 20 mA**.

NOTE	Since the ioLogik 1300 does not have AO channels, the AO setting will only show up when the project contains E1200 AO modules, such as the E1241.

- **Name**

  The name will be attached to the AOPC tag to help users identify channel information in AOPC.

DI Setting

Filter: Software filtering is used to avoid switch bounces. The filter is configurable in multiples of 100 µs and accepts values between 1 and 65535.

Counter Setting

Counter refers to an **Event Counter** channel. Counts are stored internally.

- **Filter**

  Software filtering is used to avoid switch bounces. The filter is configurable in multiples of 100 µs and accepts values between 1 and 65535.

- **Initial Value**

  The initial value is the start value in counter mode.

- **Active Mode**

  In **Active mode**, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When **Rising edge** is selected, the counter value increases when the attached switch is pushed. When **Falling edge** is selected, the counter value increases when the switch is released. When **Both** is selected, the counter value increases when the attached switch is pushed or released.
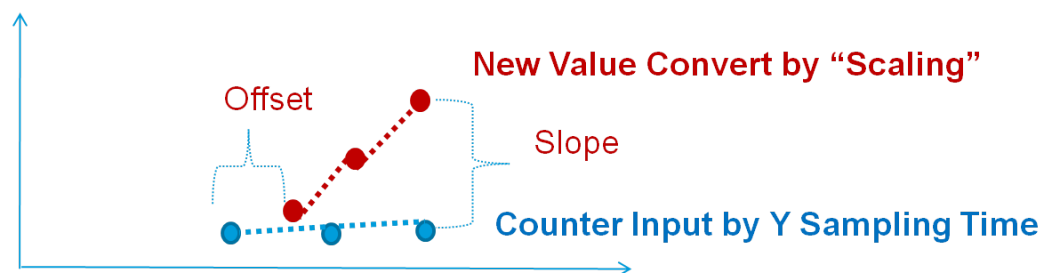
- **Power On Status**

  To enable the counter to resume counting immediately upon powering up, enable the **Power On Status**.

  Stop: The counter starts logging signals only after configured to do so by a Modbus or a Click&Go Plus command.

  Start: Counting begins automatically whenever the ioLogik is powered on.

- **Scaling Enable / Scaling Slope / Scaling Offset / Scaling Interval (sec)**

  Set the **Slope & Offset** to convert the Counter value to new units.

DO Setting

- **Enable Communication Watchdog for Safe Mode**

  When the watchdog is enabled, any disconnection from the network will activate a safe state. In the safe mode, DO channels can be configured to turn on, turn off, or commence pulse output during the safe state. If the watchdog is not enabled, then DO channel status will remain unchanged during a network disconnection.

- **Enable Auto Clear Safe Mode**

  When detecting the reconnection of Ethernet signals, the device will auto clear the safe mode status.

- **Power On Status**

  When the device is first powered on, the status of each DO channel is set to **OFF** by default. This behavior can be modified using the **Power On Status**.

- **Power On Delay**

  The time delay from tuning DO channels when the power is turned on.

• **Safe Mode Status**

Enable Communication Watchdog for Safe Mode allows you to control how DO and pulse output channels act when the network is disconnected.

If the Communication Watchdog is enabled, a network disconnection will activate a safe state. The DO channel can be configured to turn on / turn off during the safe state.

If the Communication Watchdog is not enabled, then the DO channel status will remain unchanged during a network disconnection.

<u>**Pulse Setting**</u>

Slot No.	Channel No.	On Width	Off Width	Width Unit	Count	Power On Status	Power On Delay (sec.)	Safe Mode Status
[Slot 00 Model: ...	12	1	1	100 µs	0	Stop	0	Stop
[Slot 00 Model: ...	13	1	1	100 µs	0	Stop	0	Stop
[Slot 00 Model: ...	14	1	1	100 µs	0	Stop	0	Stop
[Slot 00 Model: ...	15	1	1	100 µs	0	Stop	0	Stop

Detailed Settings: Pulse Settings
☐ Enable Communication Watchdog for Safe Mode 30 sec. ☐ Enable Auto Clear Safe Mode

• **On Width / Off Width**

In **Pulse Output mode**, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low and high level widths are specified in multiples of 100 µs for Digital Output, with a maximum setting of 65,535.
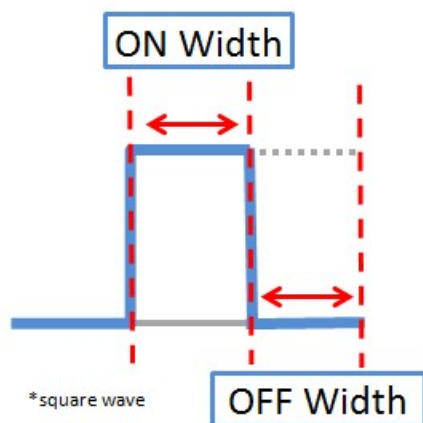
• **Count**

You can specify between 1 and 4,294,967,295 pulses or enter "0" for continuous pulse output.

• **Power On Status**

When the device is first powered on, the status of each pulse output channel is set to **OFF** by default. This behavior can be modified using the **Power On Status**.

You can set a pulse output channel to turn **ON** when the ioLogik is powered on, or to commence pulse output.

• **Power On Delay**

The time delay from tuning DO channels when the power is turned on.

• **Safe Mode Status**

If the Communication Watchdog is enabled, a network disconnection will activate a safe state. The pulse output channel can be configured to turn on / turn off during the safe state.

AI Setting

Detailed Settings	AI Settings	▼

☐ Enable Communication Watchdog for Safe Mode `30` sec.   ☐ Enable Auto Clear Safe Mode

Slot No.	Channel No.	Channel Mode	Burnout Value	Scaling Slope	Scaling Offset	Scaling Unit
[Slot 00 Model: ...	0	0-10V		1.000000	0.000000	V
[Slot 00 Model: ...	1	0-10V		1.000000	0.000000	V
[Slot 00 Model: ...	2	0-10V		1.000000	0.000000	V
[Slot 00 Model: ...	3	0-10V		1.000000	0.000000	V

- **Channel Mode**

    The input channels can be set individually to±10 V, 0 to 10 V, 0 to 20 mA, 4 to 20 mA, and 4 to 20 mA (Burnout).

- **Burn-out Value**

    Burn Out mode indicates when the Current AI has burned out. For example, the 4–20 mA Burn-out mode is defined in the following diagram:
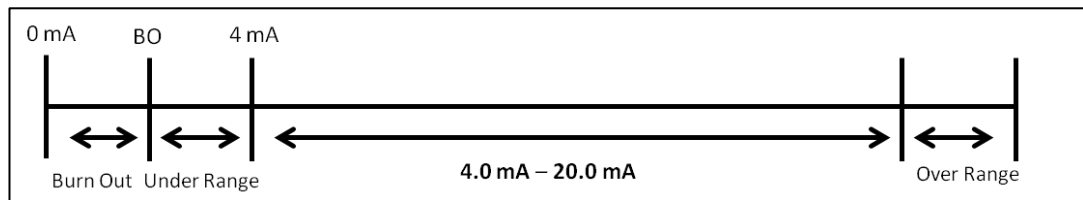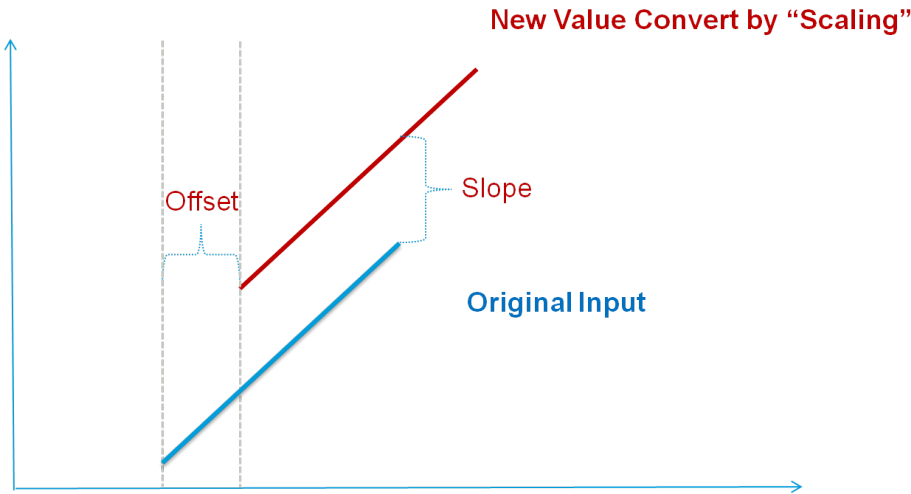

    Users can define Burn-out (BO) values (default = 2 mA) for selected ranges. When input values are in the Burn Out range, raw data will register as 0000h to indicate that the analog input has burned out. The definition of raw data is as follows:

Burnout Value (BO)	0.0 < BO < 4.0	User defined (default 2 mA)
Burnout State	0 ≤ AI < BO mA	S/W output 0000h
Under Range	BO ≤ AI < 4 mA	S/W output raw data
Normal Range	4 ≤AI ≤ 20.00 mA	S/W output raw data until FFFEh
Over Range	XX > 20.00 mA	S/W output FFFFh
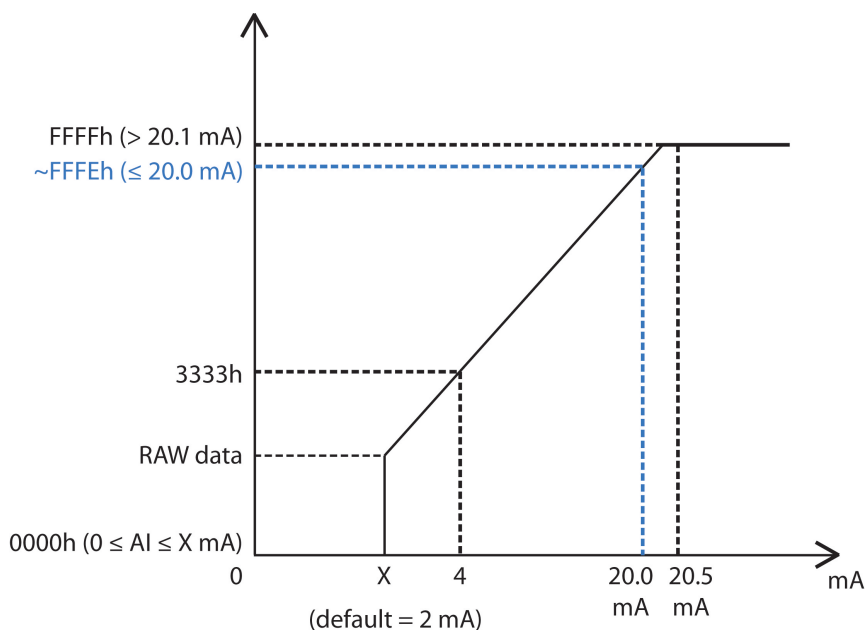
- **Scaling Slope / Scaling Offset /Scaling Unit**

    Enabling the Scaling functions will linearly convert the actual current or voltage value into other user-defined units, such as percentage or ppm (parts per million).

AO Setting

Slot Number	Channel No	Channel Mode	Scaling Slope	Scaling Offset	Scaling Unit	Power On Status	Safe Mode Status
[Slot 02 Model: E1241 (-T)]	0	4-20mA	1.000000	0.000000	mA	4.000000	4.000000
[Slot 02 Model: E1241 (-T)]	1	4-20mA	1.000000	0.000000	mA	4.000000	4.000000
[Slot 02 Model: E1241 (-T)]	2	4-20mA	1.000000	0.000000	mA	4.000000	4.000000
[Slot 02 Model: E1241 (-T)]	3	4-20mA	1.000000	0.000000	mA	4.000000	4.000000

Detail Setting   AO Setting

☐ Enable Communication Watchdog for Safe Mode 30 sec   ☐ Enable Auto Clear Safe Mode

- **Channel Mode**

    There are two modes for the AO channels: Voltage Mode (V) and Current Mode (mA).

- **Scaling Slope / Scaling Offset / Scaling Unit**

    Enabling the Scaling functions will linearly convert the actual current or voltage value into other user-defined units, such as percentage or ppm (parts per million).
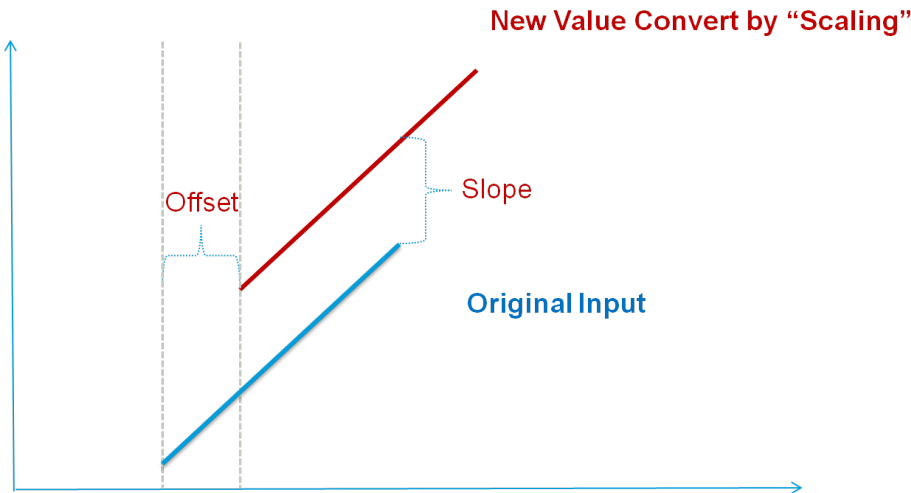
- **Power On Status**

    When the device is first powered on, the status of each AO channel can be modified using the **Power On Status**.

- **Safe Mode Status**

  Enable Communication Watchdog for Safe Mode allows you to control how an AO channel acts when the network is disconnected.

  If the Communication Watchdog is enabled, a network disconnection will activate a safe state. The AO channel can be configured to a defined value during the safe state.

NOTE	Since the ioLogik 1300 does not have AO channels, the AO setting will only show up when the project contains E1200 AO modules (such as the E1241).

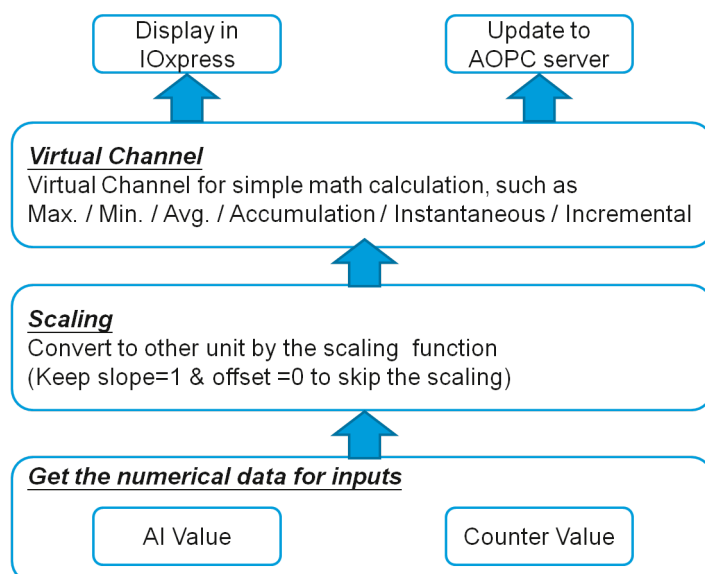**Virtual Channel Setting**

Detailed Settings | Virtual Channel Settings ▾ |

☐ Enable Communication Watchdog for Safe Mode | 30 | sec.   ☐ Enable Auto Clear Safe Mode

Slot No.	Channel No.	Status	Slot No.	Channel No.	Function	Interval (min.)	Sampling Time (min.)
[Slot 00 Model...	16	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	17	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	18	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	19	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	20	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	21	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	22	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	23	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	24	Disabled	1342-HSPA (-T)	None	Maximum	1	
[Slot 00 Model...	25	Disabled	1342-HSPA (-T)	None	Maximum	1	

The ioLogik 1300 has 10 internal virtual channels to support front-end statistics functions.

The data source is the real I/O channel, such as AI and DI counters, some of which need to be converted to the appropriate time unit. The operation is illustrated below.

For example, if you want to monitor the daily flow at a point in a pipeline, you can use a pulse output flow meter, where 1 pulse indicates 5 ml. You can set the virtual channel's **scaling function** so that 1 tick of counter input equals 5 ml. Next, set the **Accumulation** flag, and configure the **Time Interval** to 24 hours. This will set up the virtual channel to log the total water flow volume over a period of 24 hours.
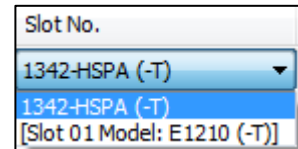
- **Status**

  Enable/Disable virtual channels.

- **Slot No.**

  If you have connected E1200 expansion modules, select the device you would like to configure here.

Slot No.
1342-HSPA (-T) ▼
1342-HSPA (-T)
[Slot 01 Model: E1210 (-T)]

- **Channel No.**

 Virtual channels are required to configure AI or counter channels.

  For counter channels, configure the Counter Scaling on the I/O Configuration panel before setting other operations in the virtual channels.

- **Function**

  There are six functions: Max, Min, Average, Accumulation, Instantaneous, and Incremental.
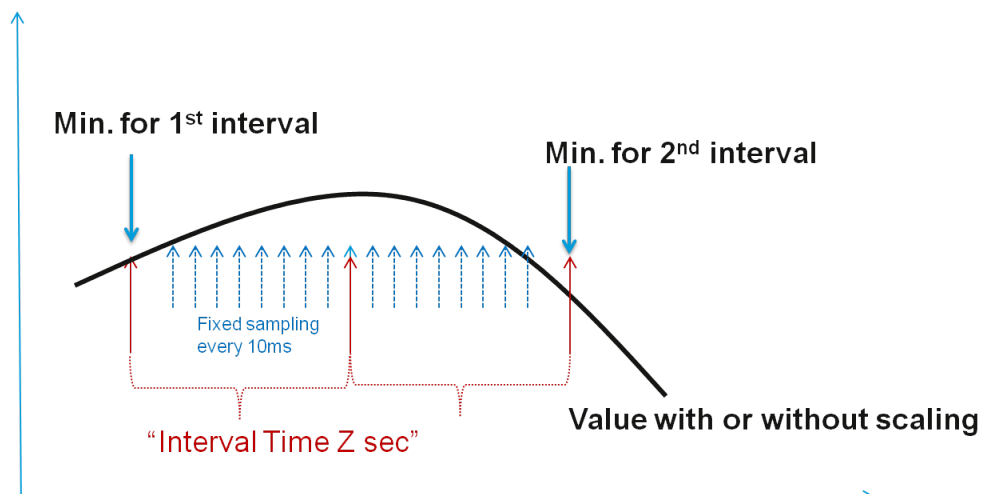
  Maximum:
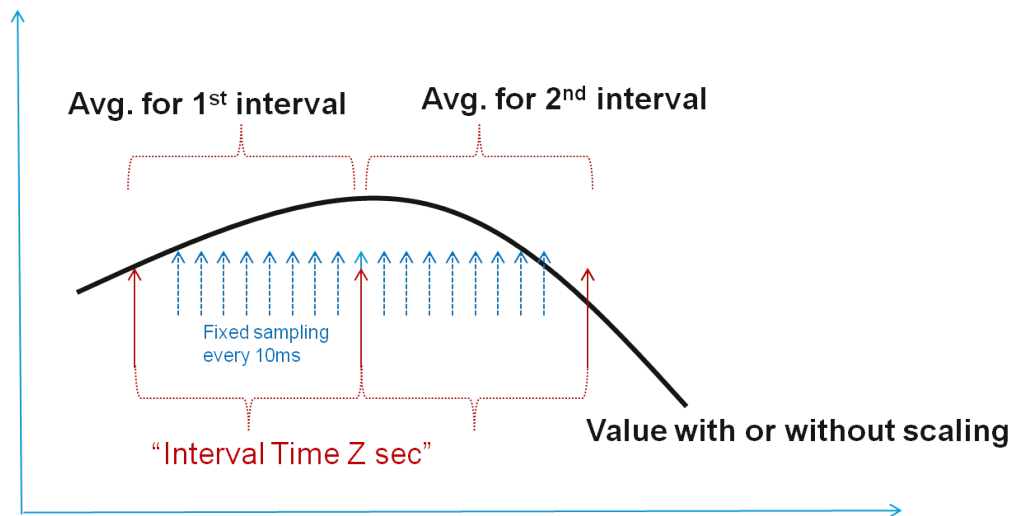 The maximum value within Z sec, with sampling done every 10 ms.
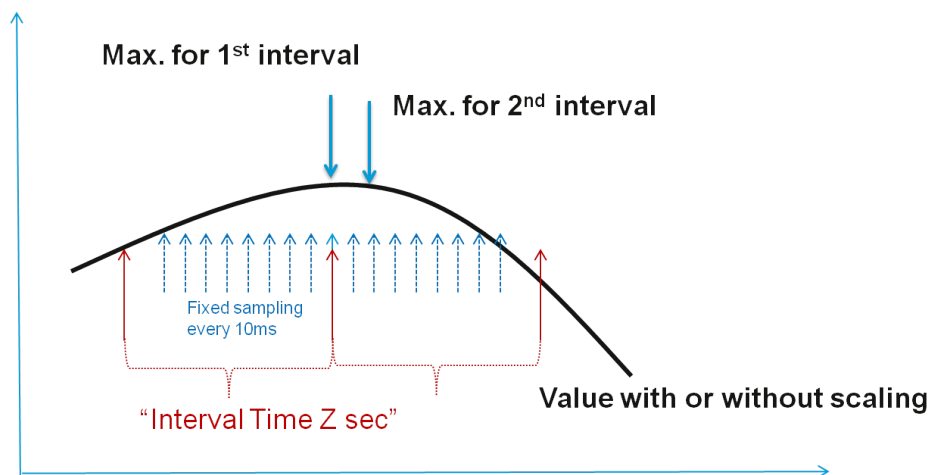
  Minimum:
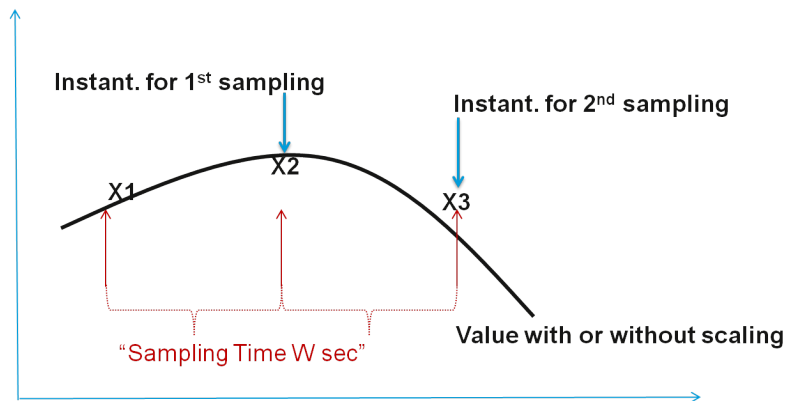 The minimum value within Z sec, with sampling done every 10 ms.
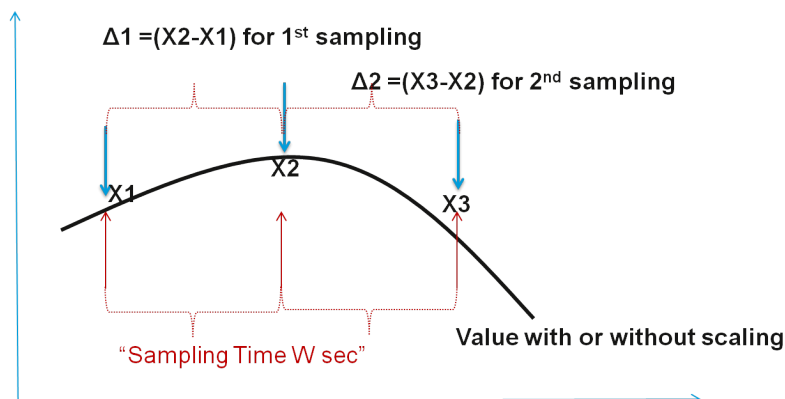
Average:

The average value within Z sec, with sampling done every 10 ms.

Instantaneous:

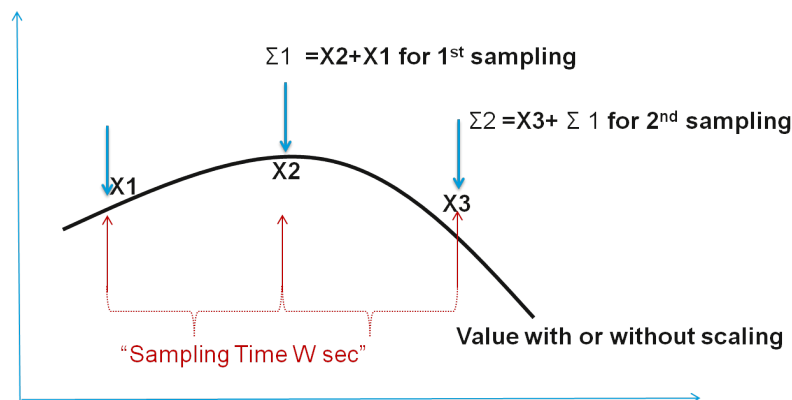The instantaneous value when a sample is taken.

Incremental:

The difference (Δ) between two samples.

Accumulation:

The sum (Σ) of all sampling values.

Σ1 =X2+X1 for 1st sampling

Σ2 =X3+ Σ 1 for 2nd sampling

X1

X2

X3

"Sampling Time W sec"

Value with or without scaling

- **Interval (min.)**

  Set the interval time for Maximum, Minimum, and Average functions.

- **Sampling Time (min.)**

  Set the sampling time for Instantaneous and Incremental functions.

Modbus Address (Dynamic Address/ User Defined)

In this section, I/O addresses can be configured for different formats. Check the **Enable Modbus Service** box, select the Modbus function, and then configure the start address of each item.

No.	Slot Number	Description	Point Type	Read/Write	Start Address (DEC)	Reference Address (DEC)	Total Channels
0	[Slot 00 Mo...	DI Value	02:INPUT STATUS	Read Only	0	10001	8
1	[Slot 00 Mo...	DI Counter Value	04:INPUT REGISTER	Read Only	0	30001	8
2	[Slot 00 Mo...	DIO Value	01:COIL STATUS	Read/Write	0	00001	8
3	[Slot 00 Mo...	DIO Counter Value	04:INPUT REGISTER	Read Only	100	30101	8
4	[Slot 00 Mo...	DIO Pulse Value	01:COIL STATUS	Read/Write	100	00101	8
5	[Slot 00 Mo...	Internal Register	03:HOLDING REGIS...	Read/Write	500	40501	48
6	[Slot 00 Mo...	Float Internal Register	03:HOLDING REGIS...	Read/Write	1000	41001	48

Active OPC Server

Moxa Active OPC Server is a software package operated as an OPC driver of an HMI or SCADA system. It offers seamless connection from Moxa ioLogik series products to SCADA systems.

Server Connection

Fill in the fixed IP address on the panel to configure the Active OPC Address and Port settings. The default port number is 9900. The port number should be the same as the setting in Active OPC Server.

- **Heartbeat Interval**

  The **Heartbeat Interval** can be used to determine the connection status between the ioLogik 1300 and Active OPC Server, and to ensure that the ioLogik 1300 is connected and alive. If the heartbeat interval is set and the network between the ioLogik 1300 and Active OPC Server is down, Active OPC Server will detect the stopped heartbeat and the Quality column in the Active OPC will display BAD to indicate the loss of connectivity.

- **Single server mode:**

  No redundancy: connects to a single Active OPC.

- **Synchronicity mode:**

  Synchronize with 2 Active OPC servers at the same time.

- **Fail-over mode:**

  The ioLogik 1300 will try to connect with the first Active OPC Server IP. If it cannot connect, it will automatically connect with the second IP, and when the connection to the second IP fails, it will switch back to the first IP.

Tag Selection

The I/O status of a channel can be updated to the Active OPC Server once it is changed, or updated periodically.

- **On Change / Percentage**

  The On Change / Percentage setting forces an update when there is a signal change for that channel (percentage change is available for analog channels).

- **Interval / Interval Time**

  To periodically update the status of the Active OPC Server, enable the **Interval** and specify a time interval in the **Interval Time** column.

NOTE	If AI is configured to update on change, the percentage settings represent the percentage of the full analog range. For example, if the AI is configured to 0 to 10 V, "On Change 1%" means the ioLogik will update the Active OPC Server every time there is 0.1 V change.

NOTE	The ioLogik 1300 supports Moxa's MX-AOPC UA server.

SNMP Server

The ioLogik supports SNMP (Simple Network Management Protocol) V1, V2c, and V3 to monitor network and I/O devices with SNMP Network Management software. It is useful in building automation and telecom applications. Use these fields to enable SNMP and set the read and write community strings for SNMP V1 and V2c, or use authentication for SNMP V3.

Peer-to-Peer

In some remote automation implementations, the control room and field sensors may be located far apart from each other, often with only a single remote I/O module to collect data from all the sensors.

Peer-to-peer communication has little or no limitation since it replaces cable by integrating multiple I/O signals over a single network cable to transmit input-to-output controls without the aid of PLCs or controllers.

With peer-to-peer communication and support for channel-to-channel mapping, the ioLogik 1300 allows simultaneous multiple target transmissions. In addition, the ioLogik 1300 supports up to 16 channels for transmission over Ethernet (based on an emitter and receiver I/O pair).

Click on **Peer to Peer** in the menu bar to configure basic device settings.
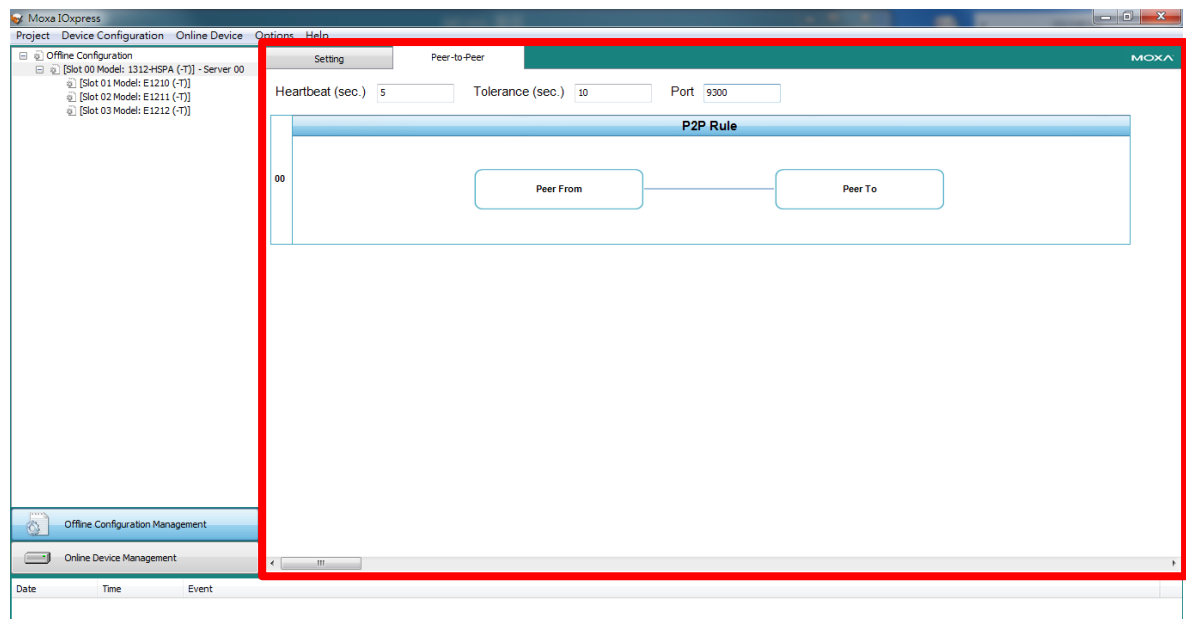
General Settings

Heartbeat (Sec)

Heartbeat is used to determine the connection status between P2P devices and to ensure that the ioLogik 1300 is connected and alive.

NOTE   If the heartbeat interval is set and the network between the P2P devices is down, the ioLogik 1300 will detect lack of heartbeat, and then disconnect the P2P connection.
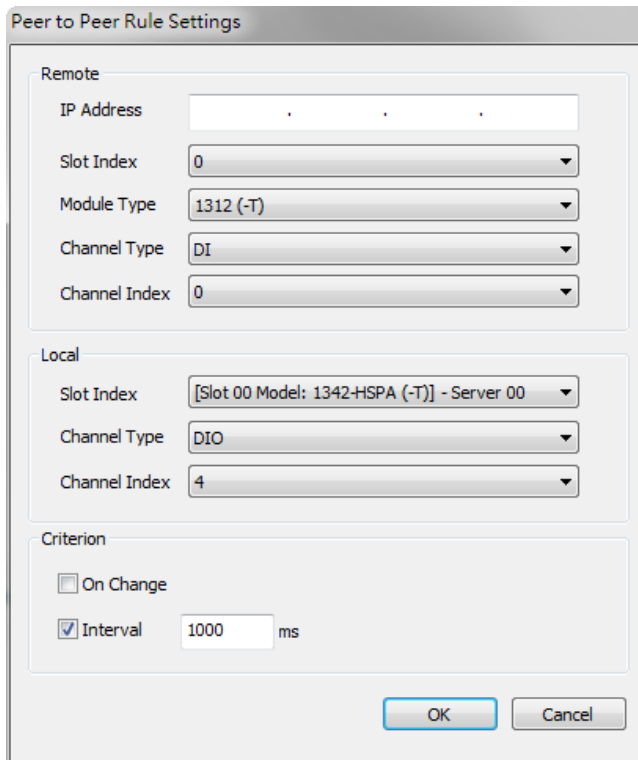
Tolerance (Sec)

Tolerance allows you to define an additional timeout interval to wait for a heartbeat signal from P2P devices.

P2P Rule Settings

With peer-to-peer communication and support for channel-to-channel mapping, the ioLogik 1300 allows simultaneous multiple target transmissions.

In a P2P rule, the ioLogik 1300 can be configured to receive a signal from a remote site and output the signal at the local site, allowing you to configure the remote site information by configuring the IP address, slot index (for expanded E1200 units), and module type.

IP Address

The IP address of the device that collects and sends signals.

Slot Index

An integer used to represent the ioLogik 1300 and its E1200 expansion units.

- 0: represents the ioLogik 1300 head unit
- 1 to 8: represents an E1200 expansion unit

Module Type

The module type of the source ioLogik 1300.

Channel Type

The DI or DIO channel of the selected unit.

Slot Index

The channel index of the unit.

On change/Interval

You can set the Interval Time and On change percentage on the local ioLogik 1300 to trigger the transmission of a mapping signal to the remote ioLogik 1300.

NOTE	Up to 16 P2P rules can be set (a set of ioLogik 1300 + up to 8 x E1200).

| NOTE	As you configure a DI or AI channel in the Local Channel field, you also need to configure the DO or AO channel on the remote ioLogik devices.

NOTE	The peer to peer channel at the remote field site will be mapped automatically. Peer-to-peer settings only need to be configured in the local ioLogik 1300 devices.

Online Configuration

Introduction

Online configuration provides two main functions:

- Importing offline configurations to online devices.
- Monitoring all online devices, such as I/O status, upgrade firmware, import configuration, export configuration, and device reset.
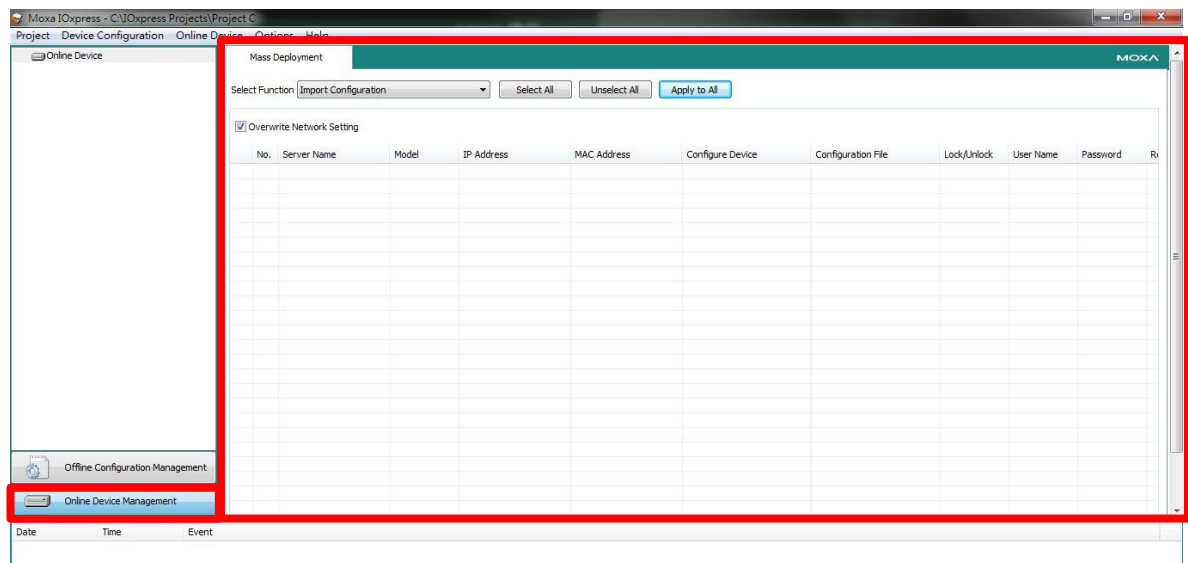
Searching for Online Devices

First Time Searching for Devices

- When you click **Online Device Management**, IOxpress will automatically display an auto-search information popup window.
- Click **Yes** to start searching for devices.
- The search information will be displayed in the Log.
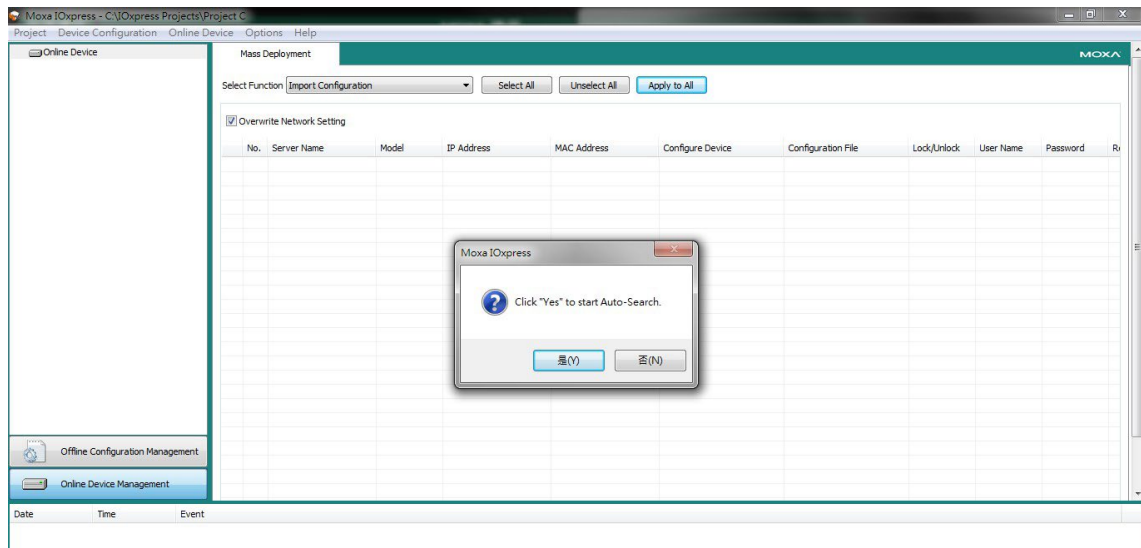
Conducting Another Search for Online Devices

If you would like to conduct another search for online devices, click **Auto-search Device** in the **Online Device** menu.
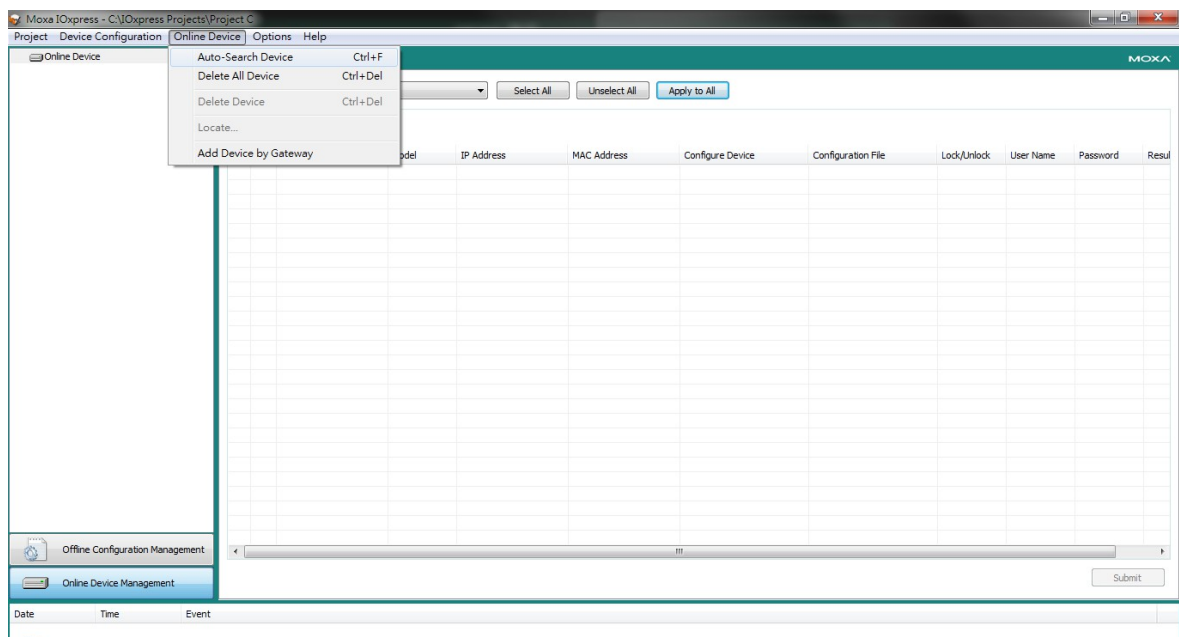

Mass Deployment

Mass deployment allows you to deploy multiple devices at the same time. To execute a mass deployment, first click **Online Device** in the left panel, and then click **Import Configuration** to open the dropdown box.

Ten different functions can be used for mass deployment, including **Firmware Update**, **Reboot Device**, and **Change IP Address**, as shown in the figure below.
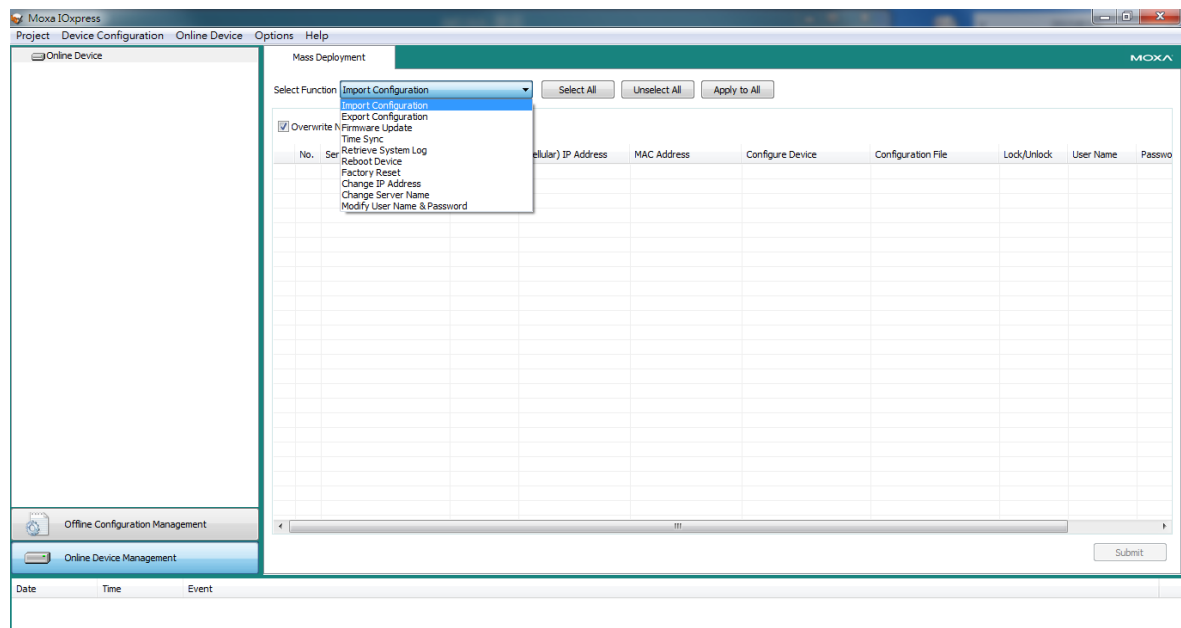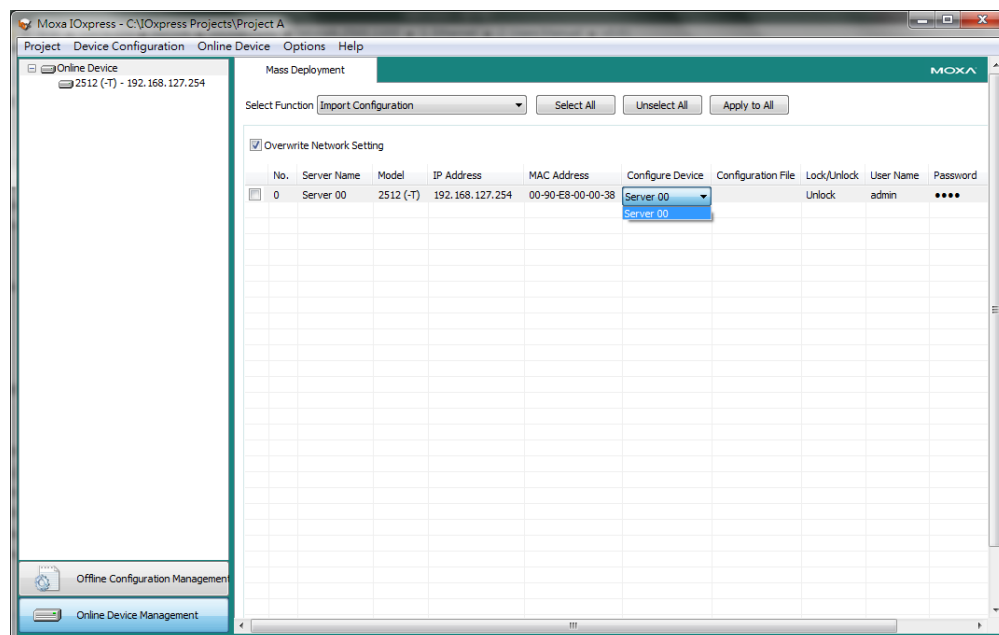

Import Configuration

The ioLogik's system configuration, including the current Click&Go Plus rule-set, can be imported and exported to the ioLogik 1300 device. You will need to know the user name and password to use this functionality.

There are two ways to import a configuration:

Configure Device:

To import from a preset offline configuration, click the **Configure Device** column and select the configuration you created.

Configuration File:

Import from configuration files saved on your computer.

NOTE   If the device is Locked, you must log in as administrator to gain access to the ioLogik's configuration
        options. If you have not updated the username and password, use the default:
            Default User Name: admin
            Default password: moxa

NOTE   If you do not want to change a device's network settings,
        uncheck the **Overwrite Network Setting** checkbox.   ☑ Overwrite Network Setting
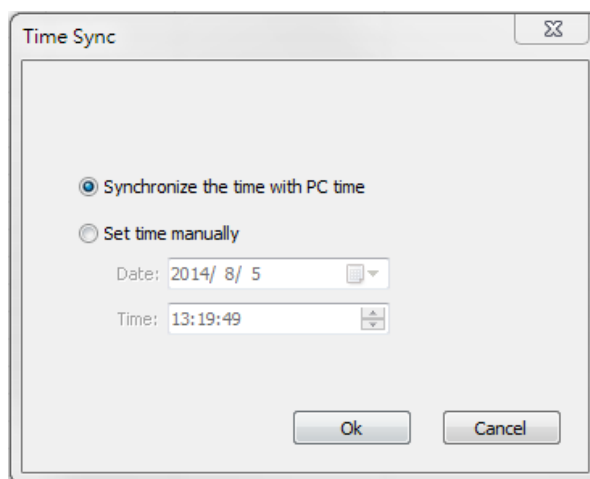
Export Configuration

After you make changes to a rule-set, you can export the system configuration to save the updated rule-set.

Firmware Update

The **Firmware Update** tab is available after you log in as administrator. Enter the path to the firmware file
or click on the icon to browse for the file. Click **Update** to update the ioLogik firmware. The wizard will lead
you through the entire process, including restarting the ioLogik.

Time Sync

The ioLogik 1300 can be set to be synchronized with PC time, or the time can be set manually.

Retrieve System Log

You can retrieve the system logs from selected devices and save the logs as Notepad files on your
computer. System logs contain system operations information, like firmware upgrades, restarts, and
configuration imports.

Reboot Device

Select this command to restart a selected ioLogik 1300.

Factory Reset

Select this command to reset all settings on the selected ioLogik, including the password and all
configuration settings, to factory default values.

Change IP Address

Use this function to change the IP address.

Change Server Name
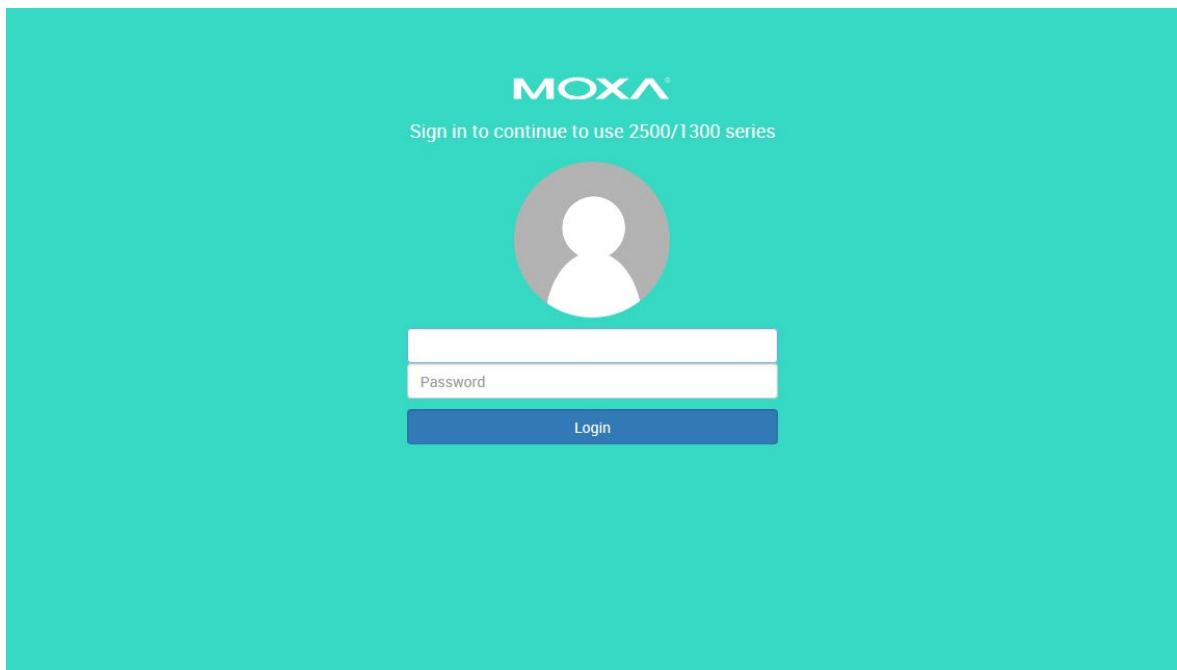
Use this function to change the server name.

Modify User Name & Password

Use this function to change the User Name & Password.

Deploying Individual Devices

To check device information for individual devices, click the device listed in the Online Device column and then log in to the device.

NOTE	• Default user name: admin
	• Default password: moxa
	Note: The user name and password are **case-sensitive**.

IO Status

The IO status tab allows you to execute the following information:

I/O information

The following information will appear at the top of the page.

MOXA®		ioLogik 1312-GPRS			www.moxa.com
■ Name	-1312-gprs_192_168_12_32_George	■ IP	-192.168.12.32	■ MAC	-00-90-E8-13-12-12
		■ Click & Go	-Stop	■ Connection status	-Connecting
■ Firmware	-V1.0.0.0	■ Serial No.	-131200000012		

I/O status

     I/O Status   Check the complete I/O status.

Upgrade

     Upgrade   Click this icon to upgrade the firmware.

Import

     Import   Click this icon to import a device configuration.

Export

     Export   Click this icon to export a device configuration.

Reset

     Reset   Click this icon to reset the device.

4

Cellular Network Setup and Configuration (for cellular models)

In this chapter, we introduce how to set up your ioLogik 1300-GPRS/HSPA device.

The following topics are covered in this chapter:

❒ **IOxpress Settings for a Cellular Network**
  ➢ Select Major Network Interface
  ➢ Cellular

❒ **Cellular Network Connection**
  ➢ MX-AOPC Server (for SCADA/HMI users)
  ➢ With DDNS (for SCADA/HMI users)
  ➢ Moxa Cellular Data Access Utility (for mobile devices/PCs)

IOxpress Settings for a Cellular Network

When you add an ioLogik 1300-GPRS/HSPA model, the following two functions will be available (in addition to the functions discussed in Chapter 3).

Select Major Network Interface

Configure your device's cellular network settings on the **Select Major Network Interface** page, which is located under the **Network-General** sub-page.

Cellular Only

You can configure under what conditions the ioLogik 1300-GPRS/HSPA will connect to the cellular network. For example, the device could be triggered by a Click&Go Plus rule or by wake on call.

Ethernet as Primary and Cellular as Backup

By selecting this function, a remote destination is used in this setting to indicate if the Internet connection is still alive. The user can specify a public IP or URL and the number of retries that are allowed.

Dest IP/URL

This option, which can be configured to either an AOPC server IP or any public URL, will be used by the device to determine whether or not it is connected to the Internet.

Continuous Check Until 3 failures

The ioLogik 1300-GPRS/HSPA continuously check its connection with the IP/URL to ensure that it is constantly connected to the internet (could incur a high cost, depending on your cellular plan).

Retry Interval

The "retry interval" is the time interval between retries.

Cellular

Cellular network settings are configured on the "cellular" page, which is located under under "Network."

General

To set up your cellular connection, click the **Cellular Settings** tab and enter your **User name**, **Password**, **SIM pin code**, and **APN** of your Cellular Provider (contact your local Cellular Service Provider for assistance).

VPN

In this section, we explain how to set up a VPN connection for the ioLogik 1300-GPRS/HSPA.

Enable VPN

VPN Tunnel Mode

Select **Manual Key/ESP** or **ISAKMP/PSK**.

Remote Endpoint IP

Enter the **WAN IP** of the remote VPN server endpoint.

Remote Subnet IP:

Enter the remote VPN server subnet (LAN) IP of the remote network.

Remote Subnet netmask

Enter the remote VPN server subnet netmask of the remote network.

<u>**Local subnet IP**</u>

Enter the ioLogik 1300's subnet (LAN) IP.

<u>**Local Subnet netmask**</u>

Enter the ioLogik 1300's subnet netmask.

Manual Key

<u>**SPI**</u>

Set the VPN manual key for incoming/outgoing SPI between 257 and 4294967295.

<u>**Encryption mode**</u>

Select the incoming/outgoing encryption mode.

<u>**Encryption key**</u>

Enter the incoming/outgoing encryption key.

Encryption mode	Length (bytes)
DES	8
3DES	24
AES 128bit	16
AES 192bit	24
AES 256bit	32

<u>**Authentication mode**</u>

Select the incoming/outgoing authentication mode.

<u>**Authentication key**</u>

Enter the incoming/outgoing authentication key.

Authentication mode	Length (bytes)
MDS	16
SHA1	20

Reconnection

Carriers disconnect idle mobile device connections in order to save bandwidth for other on-line users and applications. To keep the ioLogik 1300-GPRS/HSPA always On, the ioLogik 1300-GPRS/HSPA must not only have the capability to detect the cellular connection and reconnect to the network once it is disconnected, but also needs to send out signals (ICMP package) to notify carriers that the ioLogik 1300-GPRS/HSPA is still alive.

Cellular Network Reconnection Settings

This setting defines the timeout for detecting the physical cellular connection. Once the ioLogik reaches the timeout, it will perform a system restart.

Timeout

When you turn on the ioLogik 1300-GPRS/HSPA, the device will continue to connect to the GSM for a period of 60 seconds (the default setting). If it fails to connect, the device will automatically restart the modem board after 60 seconds.

Retries

After the connection between the device and GSM (carrier) has been made, the device will try to connect with the Internet. After 5 times (the default setting) of failed retry, the ioLogik 1300-GPRS/HSPA will restart the modem board.

Ping Settings

A remote destination is used in this setting to indicate if the Internet connection is still alive. The user can specify a public IP or URL and the number of retries that are allowed.

Dest IP/URL

Can either be an AOPC server IP or any public URL for the device to check its connection with the internet.

Retry Interval

The retry will be activated when the AOPC can't connect with the AOPC server. The ioLogik 1300-GPRS/HSPA will tell the machine to ping the Dest IP/URL to check for an Internet connection.

Enable SIM Failover Mode

When the **Enable SIM Failover Mode** checkbox is selected, the ioLogik 1300-GPRS/HSPA will switch from one SIM card to the other when a connection cannot be established using the active SIM card.

System Reconnect after 1 hours (1 to 24)

If **Carrier Check before system restart** or **PING Check before system restart** is selected, the system will check if there is still a wireless connection.

If the wireless signal is unstable and disconnects, the ioLogik 1300-GPRS/HSPA will first reboot the modem to restore the physical layer connection. Enable **System Reconnect** to reinitiate the ioLogik 1300-GPRS/HSPA. If rebooting the modem does not recover your connection, the disconnection may be caused by a higher layer communication problem. You may select a **System Reconnect** interval from 1 to 24 hours.

Port Forwarding

The ioLogik 1300-GPRS/HSPA supports port forwarding on its cellular and Ethernet interfaces for WAN-to-LAN communication. Using port forwarding, the ioLogik W5300 allows external WAN hosts such as SCADA/HMI systems to connect to specific field devices within the LAN by linking with the ioLogik 1300-GPRS/HSPA.
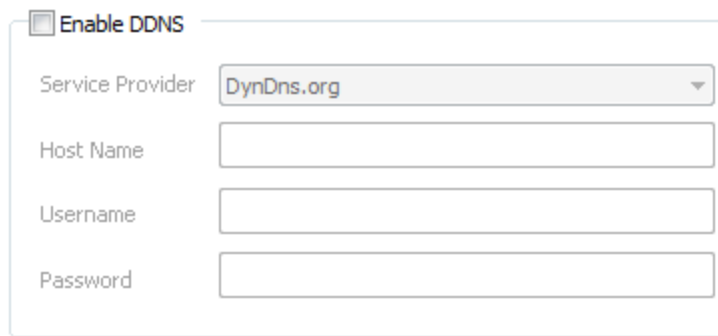
Enable Port Forwarding

Enabled	Index	Protocol	Public Port	Internal IP	Internal Port	
☐	0	TCP	0	0.0.0.0	0	
☐	1	TCP	0	0.0.0.0	0	
☐	2	TCP	0	0.0.0.0	0	
☐	3	TCP	0	0.0.0.0	0	
☐	4	TCP	0	0.0.0.0	0	
☐	5	TCP	0	0.0.0.0	0	
☐	6	TCP	0	0.0.0.0	0	
☐	7	TCP	0	0.0.0.0	0	
☐	8	TCP	0	0.0.0.0	0	
☐	9	TCP	0	0.0.0.0	0	

Note: The Internal IP cannot be on the same subnet as the IO expansion module (currently 192.168.120.1).

DDNS

The purpose of DDNS is to provide you with an alternative cost effective cellular plan. You will not need to establish a server or pay for a Static IP. Setting up DDNS allows the ioLogik 1300-GPRS/HSPA to behave like a server and perform functions such as email, ftp, etc. Regardless of whether the device has a floating IP or a private IP, the user can establish a connection with their remote device through DDNS. DDNS allows the SCADA/HMI server to establish a connection through the DDNS server to find the remote device.

Service Provider (default=DynDns.org)

Currently, DynDns.org is the only option available for Server address.

Host name

Enter the name you created on www.dyndns.com in this field. The ioLogik 1300-GPRS/HSPA will update the DynDNS server with this host name.

Username

This is the user name used for updating DDNS Server authentication.
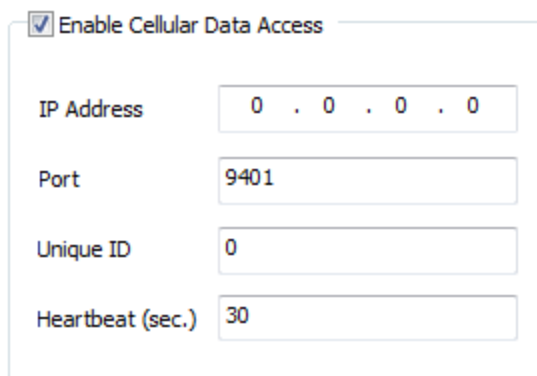
Password

This is the password used for updating DDNS Server authentication.

Cellular Data Access

The **Cellular Data Access** setting is used for connecting to Moxa cellular data access utilities.

For detailed information on how to set up the cellular data access server, see the next section, **Moxa Cellular Data Access Utility**.

IP address

Enter the IP address of the cellular data access server.

Port

Enter the port number of the cellular data access server.

Unique ID

The unique ID is used for remote action functions. For detailed information, refer to the Click&Go Plus User's Manual.

Heartbeat (sec.)

The heartbeat is used to determine whether or not the connection between an ioLogik device and the cellular data access server is still active.

Cellular Network Connection

The dynamic IP addresses commonly used for cellular connections make it hard for control systems to link to cellular data acquisition devices. With Moxa's MX-AOPC server, SCADA/HMI users can easily connect to field I/O devices. For web-based applications, Moxa's cellular data access utility provides an ideal way to seamlessly connect to remote cellular IO units.

MX-AOPC Server (for SCADA/HMI users)

To allow private networks to get around the connectivity issues raised by edge devices configured with dynamically assigned private IP addresses, typically operators purchase high-cost static IP addresses for each device, with IPs provided by a DDNS or VPN service purchased from an MVNO (Mobile Virtual Network Operator). Even with DDNS technology, SCADA systems need to assign resources to manage the DDNS servers. As an alternative, Moxa's Cellular remote I/O devices use Moxa's proprietary "push" technology, called Active OPC Server.
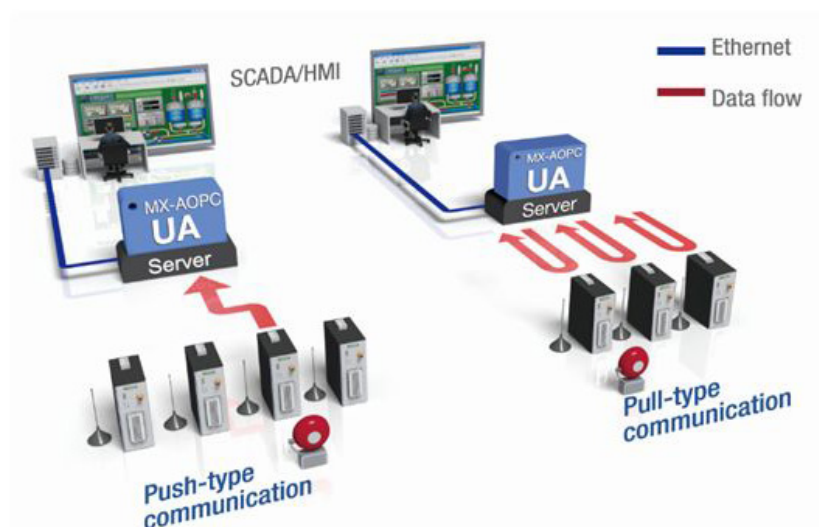
With Moxa's powerful Active OPC Server support, communications efficiency between ioLogik 1300-GPRS/HSPA devices and the central SCADA are substantially improved. Moxa's Active OPC Server's non-polling communications architecture supports the standard OPC protocol, but instead of requiring the SCADA to poll edge devices it allows edge devices to actively push communications to the central HMI/SCADA system, empowering the network with real time I/O updates while substantially cutting network overhead.

Unlike the requirements of a traditional OPC server (where remote I/O devices must use a static IP so they may be successfully polled), Active OPC Server and ioLogik products allow engineers the flexibility of configuring edge devices with dynamic IP addresses. Even when using DHCP addressing, ioLogik devices can push messages back to the OPC server, allowing wide area I/O networks using dynamic IP cellular accounts. Using traditional polling OPC applications, I/O devices cannot make use of this approach.

With DDNS (for SCADA/HMI users)

In addition to using Active OPC Server to register an ioLogik ioLogik 1300-GPRS/HSPA with SCADA over a dynamic IP cellular connection, you may also use DDNS to configure the device with a unique URL. The ioLogik 1300-GPRS/HSPA can be configured to register a DNS hostname (i.e. – URL) with DDNS, and thereby convert a dynamic IP to a publicized address. In this way, centralized control software will be able to connect to the remote ioLogik W5300 without requiring a fixed IP or VPN service from a network provider.

Moxa Cellular Data Access Utility (for mobile devices/PCs)

With the Moxa cellular data access utility, you can configure the ioLogik 1300-GPRS/HSPA using the IOxpress utility over the cellular network. You can also log on to selected ioLogik 1300 devices by using a specific URL port. In this section, we explain how to use these two methods to connect devices.

Step1: Installing Cellular Data Access Utility on a server PC

Cellular Data Access Utility is a Windows utility provided for connecting and managing the ioLogik 1300-GPRS/HSPA over a cellular network. Cellular Data Access Utility can be used from anywhere on the network to monitor and configure the ioLogik 1300-GPRS/HSPA.

Installing from the CD

Insert the Document and Software CD into the host computer. In the Software/Utility directory of the CD, locate and run **SETUP.EXE**. The installation program will guide you through the installation process and install the ioAdmin utility. After the installation is finished, run ioAdmin from the Windows Start menu.

Downloading from Moxa's Website

Click the following link: http://www.moxa.com/support/search.aspx?type=soft.

Enter the name of the product you have purchased into the search bar or select it from the dropdown menu, and after navigating to the product page click on Utilities, in the middle of the page, located in the box titled Software.

Step2: Use "offline configuration" to set up the ioLogik 1300-GPRS/HSPA

Before you start using the cellular data access utility, set up the "cellular data access" function. See the **Cellular Data Access** section in this chapter for details.

Step3: Connect to the device over the cellular network
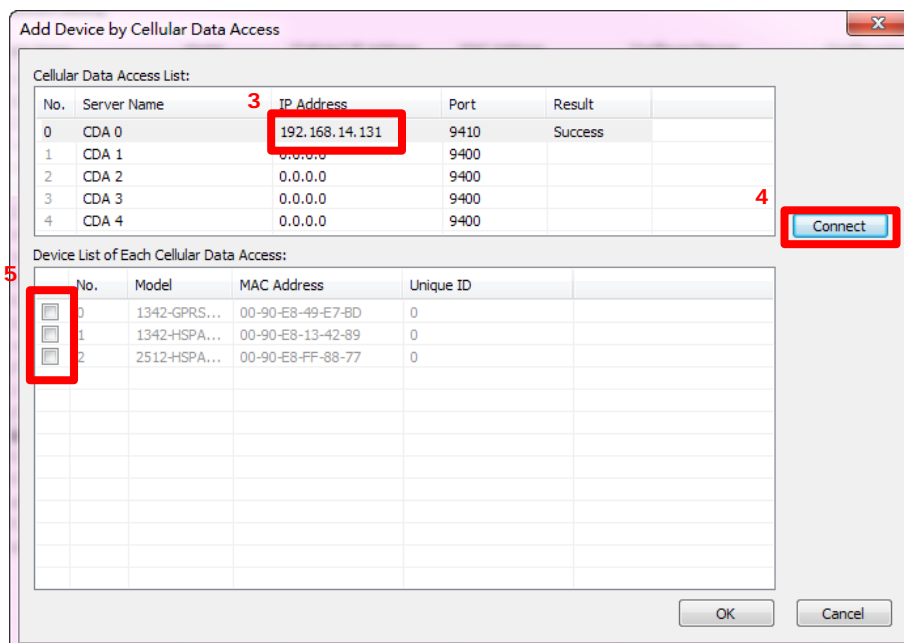
Using IOxpress

Connect to the cellular Data Access server using Online Device Management, as described below:

1. Click **Online Device Management**.
2. Select **Add Device by Cellular Data Access**.
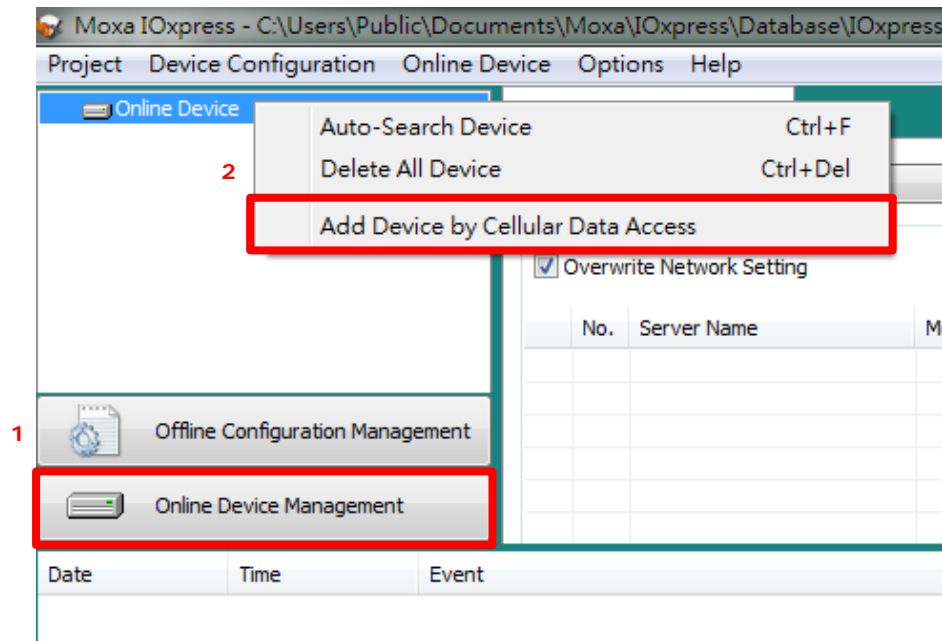
3. Type in the server's IP address and port number.
4. Click the **Connect** checkbox.
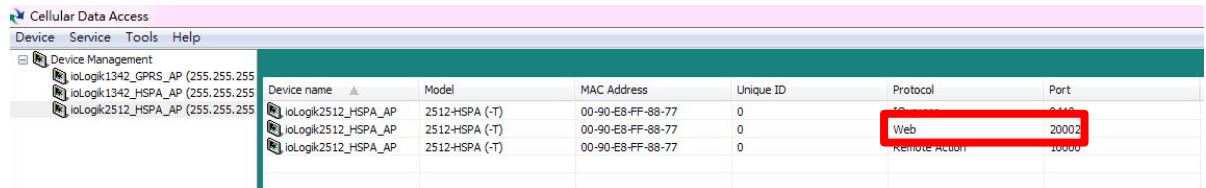5. Select the cellular device that you would like to connect to.

6. The selected devices have been added to the online device list, and you can start to upload/configure your devices over the cellular network.

Using a browser URL

1. Check the port number in the cellular data access utility.

   Once the devices are connected, the utility will automatically assign URL ports to the devices.

2. Access the device via the browser.

   You can use the URL to connect to the device by typing **http://[IP address]** of Moxa Cellular access
   server port : number of the device assigned by the server.

   E.g., 192.168.17.253:20002

A

Network Port Usage

The ioLogik 1300 uses the following network ports:

Usage	Type	Port	User-Defined
Web Console	TCP	80	
SNMP Server	TCP	161	
SNMP Client	TCP	162	
Modbus Communication	TCP	502	
SMTP	TCP	587	✓
Auto Search Function	UDP	4800	
Peer-to-peer Function	TCP	9300	✓
IOxpress	TCP	10124	
AOPC Protocol*	TCP	9200	
	TCP	9300	
	TCP	9500	
	TCP	9900	✓

*The ioLogik 1300 series only supports MX-AOPC UA server.

NOTE
- Client refers to when the ioLogik 1300 is acting as a client to connect other services.
- Server refers to when the ioLogik 1300 is acting as a server to provide services to other devices.